THE
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FOOT-AND-MOUTH DISEASE.

The Other Side of the Picture.

VETERINARY SERVICE AND ITS RECORD.

By Major-General Sir JOHN MOORE, late Army Veterinary Service.

(Reprinted from *The Morning Post.*)

In a recent issue of the *Morning Post* "An Agricultural Correspondent," writing on the handling of Contagious Diseases in Animals, is given an opportunity of ventilating his claims for the superiority of that dual control of lay and veterinary inspectorates which existed under the old system over the present system, whereby control is vested in a scientific profession and body of experts trained in the particularities of animal diseases, and thereby specially fitted to apply measures for their prevention, control, and eradication.

He alleges that the replacement of the lay inspectors by "an exclusively veterinary staff comparatively insignificant in numbers, however fully equipped in personnel, has in the result proved hopelessly misguided, and from the point of view of national economy as then contemplated, wasteful in the last degree." In his opinion the adoption of the present system has proved "failure, dismal and disastrous, both from an administrative point of view and from that of economy."

Criticism is good and wholesome, and progress is often only achieved through setbacks, but the words of the Agricultural Correspondent are unfair and sweeping to a profession which commands the highest respect in our country and in our Dominions, both from an organisation and from an executive point of view. It would appear only right that the other side of the picture should be exposed to public view—one showing in prominent detail the large credit of a comparatively young Service in the country's capital account.

THE VETERINARIAN'S POSITION.

In the first place an ugly thought occurs to the average mind—that a severe visitation of contagious animal disease would bring grist to the mill of the veterinary practitioner. Now what is the attitude of the profession to the present question of foot-and-mouth disease, and indeed to all measures relating to the control of disease? Are members actuated by any mercenary feelings of individual pecuniary advantages? The answer is best given in the resolutions unanimously passed recently by the Central Veterinary Society and the National Veterinary Medical Association, and forwarded to the Ministry of Agriculture, expressing their confidence in and their support of the Ministry in measures which it deemed advisable and wise to pursue in respect to the disease. Such sympathy and support in difficult circumstances is a clear indication that members of the veterinary profession are prepared to give their best in the services of their country in her needs.

But to combat a charge of administrative misguidance and national economic failure to a degree dismal and disastrous, it is desired in this article to place on record a few facts of comparatively recent times which will show to the public mind that the Veterinary Service of our country is not the inefficient thing which some deem it to be, but that, on the other hand, in organised method and in execution, it takes an acknowledged place in the van of the veterinary science of the world.

THE WAR RECORD.

During the late Great War the Veterinary Service of the Army was given the chance it desired to prove its value. It was placed on the same level as all other Administrative Services and Departments of the Army, its organisation being on a self-contained basis. It carried the entire confidence of and received the fullest sympathy and constant support from the Army Council and from all Commanders in the Field; and it is not beyond the mark to say that, if any Service can be held to pay during the difficult and wasteful time of war, the Veterinary Service of the Army could furnish an example.

Its organisation was most simple, as all good organisation should be: its officers and men were efficient to a high degree, and when duly established on a self-contained Corps basis, it practically ran automatically. In the Expeditionary Force in France alone, operations resulted in the evacuation of between 3,000 and 4,000 sick animals weekly; inefficiency was reduced to a total of 12 per cent. in winter and 7·4 per cent. in summer, 2 per cent. representing minor ailments existing in the fighting line—a condition of affairs which was the envy of our Allies, who were not so favourably circumstanced in matters of organisation. So far as contagious disease was concerned, glanders, the bugbear of an army in bygone days, was excluded; that serious disease, epizootic lymphangitis, rendered difficult by reason

of its insidiousness and its long incubative period of from two and a half to six months, was kept under so efficiently that not a single instance of occurrence in England resulted on the return of 62,000 animals to that country. Indeed, the non-introduction of serious animal disease from the Continent into Great Britain and Ireland on the return of troops, whether on leave or on general demobilisation, remains the outstanding hall-mark of efficiency of the veterinary services of our country, both in the Army and Civil Departments; and it is a matter which will not be forgotten in the annals of the war, though it may need emphasis at times to those who are careless of appreciation.

Foot-and-Mouth Disease.

Now as regards foot-and-mouth disease, it may not be generally known that its frequent occurrence in the areas of our troops in France necessitated the publication of a special General Routine Order in respect to the disease, the vacation of affected premises, the disinfection of the clothing, boots, etc., of men who had been in contact, the issue even of new clothing before the men could proceed on leave home, and other matters incidental to control. The order was published in August, 1915, and continued in operation right up to the end of war. Administrative Veterinary Officers were also directed to place themselves at the disposal of prefects and sou-prefects of districts for any necessary advisory duty; thereby acting the rôle of inspectors within their areas. On the final retreat of the Germans, and the return of Belgian refugees at the end of 1918, the whole of Brabant and Hainault was a seething mass of foot-and-mouth disease—so much so that the Veterinary Service of our Armies was specially called in to assist in suppression and in the supply and distribution of the necessary disinfectants in areas occupied by our troops. Of course, all such measures and assistance came to an end on demobilisation, but the incidence of foot-and-mouth disease in Great Britain and Ireland during the period of the war and after is on record, and is quoted below:

Summary of Returns of Foot and Mouth Disease.—Board of Agriculture.

	Great Britain		Ireland	
Year.	Outbreaks Confirmed	Animals slaughtered as diseased or exposed to infection.	Outbreaks Confirmed.	Animals' slaughtered as diseased. or exposed to infection.
1916	1	73	—	—
1917	—	—	—	—
1918	3	40	—	—
1919	75	3,437	—	—
1920	93	11,373	—	—
1921	44	3,085	7	77
1922	1,058	50,321	—	—

It is not claimed that the infrequency of outbreaks of foot-and-mouth disease in Great Britain and Ireland during the period of the war is the direct outcome of measures taken by the Expeditionary Force (France); but duly considering the undoubted fact that the source of foot-and-mouth disease in England is a Continental one, a certain amount of credit is due to those veterinary officers, administrative and executive, who so thoroughly brought their special training and knowledge to bear in the safeguarding of their home country from dire animal disease. And many of the veterinary officers then serving with the army are servants of the State, engaged in dealing with foot-and-mouth outbreaks in Great Britain to-day.

First Principles.

Given support similar to that enjoyed by the Army Veterinary Service during the war, the Civil Veterinary Service most assuredly will repay the public confidence placed in it. If there is default, it bears relation to imperfect basic knowledge of this and kindred diseases, and the remedy lies in research. The first principle in the handling or treatment of disease is to remove the cause, and the effects will cease. The causative organism of foot-and-mouth disease has not yet been discovered, and until that happy event has been accomplished, control obviously is applied in the dark, and measures assume the empirical. Up to quite recently the veterinary profession has had to depend on its own resources for the elucidation of animal diseases; no private benefactions are directed towards its path, and State support unfortunately has not been commensurate to necessity. Perhaps the profession is at fault in suffering itself to remain too much in the background; but there are now signs that public interests demand that it should take its rightful place in the affairs of State, where animals are concerned, and where the health of the nation so greatly depends on the animals it maintains. To enable progress to be made in the domain of research, the writer considers that the time is ripe for the creation of a properly-constituted Diseases of Animals Research Council, with provision for collaborating with other research bodies as may be desirable or necessary, whether such are medical, agricultural, or industrial. If the veterinary profession is to excel in research, it must be drawn into the swim of things, and not be left to its own devices.

As a successful business factor again a parallel may be cited from the record of the Army Veterinary Service during the war. The disposal of worn-out animals of the force in France was entrusted to that Service, and having an organisation in the field convenient for purposes of sale of surplus animals to inhabitants on the final break up of the force, that item of disposal was also undertaken by the Veterinary Service in conjunction with the Remount Service. The following proceeds speak for themselves: Sale of by-products, £55,040; sales for purposes of food, £1,303,323; sales to farmers and breeders, £3,947,775; and a better example of real business would be difficult to find.

In conclusion, it is of interest to revert to the statement given above of the incidence of foot-and-mouth disease in Great Britain and Ireland during the war. As has been previously stated, it need not be taken as evidence of the completeness of preventive measures taken by the Expeditionary Force against

(Continued at foot of next column.)

Some Skin Diseases in the Dog.*

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Diseases of the skin follow the same laws as do those of the other organs. Thus, the condition of hyperæmia, anæmia, inflammation, ulceration, hypertrophy, etc., are to be found, as well as neoplasms and parasites. The greater proportion of skin diseases in the dog are associated with inflammation and it is at once evident that the skin of the dog is exposed to a great variety of irritants.

Classification, whether on a clinical or pathological basis has always offered serious difficulty and, in consequence, it is not always easy to formulate a definite diagnosis on the spot. The clinical appearances of some diseases are very similar and may easily be confused. The different aspects of the same disease in different breeds, the covering of the body by hair and the varied conditions of life, all militate against definition of symptoms.

Again, the multiplicity of and wide variation in skin troubles of the dog have led to the establishment of a number of loose terms which are used indiscriminately by the layman. Perhaps the most loosely used term is "eczema," but we hear daily such terms as puppy eczema, milk rash, teething rash, etc., and, as often as not, these terms are used as a cloak for mange.

In some specific conditions, diagnosis is established by discovery of the causal organism or parasite. This again may be easy (as in pustular, follicular mange) or difficult (as in squamous follicular). Broadly speaking a classification may be made under two headings:—(1) Parasitic; (2) Non-parasitic.

From the practical standpoint this is the essential division, as the practitioner is frequently called upon to decide between the infectious and non-infectious. Such instances are concerned with sale and purchase, admission of dogs to show and certificates of health for insurance or export.

(*Continued from previous page.*)

the introduction of disease into Great Britain and Ireland. It tends to disprove, however, conveyance of infection by birds, and would appear to favour introduction through the media of packing material and feeding stuffs for animals on the resumption of Continental trade after the war. Experience also shows that in aphthous diseases infection is more intense in cold weather than in hot. Whatever the cause, it seems to thrive on cold. For instance, the contagious stomatitis which affected the animals of the force during one winter season spread with amazing rapidity during frost and snow, and with the advent of the warmer weather of approaching spring it disappeared as mysteriously and almost as quickly as it came, to be seen no more.

* Presented to the Midland Counties Division at Leicester, on December 7th, 1923.

Here, it is obvious that an error in diagnosis may be serious and far-reaching. For the purposes of discussion it may be better to refer briefly to a number of the commoner conditions rather tha a detailed consideration of any one or two.

The main objective symptoms of skin affections are known as exanthema and these are either primary or secondary.

1. PRIMARY. (*a*) *Maculae* or discolorations due to abnormalities in circulation or pigmentation. Thus, the discolorations caused by local or general hyperæmia are known respectively as roseola and erythema. Hæmorrhagic patches are described as petechial spots or ecchymoses as being local or diffuse respectively.

(*b*) *Nodule* or *papule* is an elevation of the skin averaging about the size of a millet seed, due to local inflammation and formation of new tissue. Contains no fluid.

(*c*) *Vesicle.* An accumulation of fluid under the epithelium caused by serious exudation from the capillary layer. Large vesicles are called blisters or blebs.

(*d*) *Pustules.* Blisters or vesicles filled with pus, brought about by infection.

2. SECONDARY. Ultimate stage of primary.

Excoriation—Desquamation of epithelium.

Squamae—Sloughing of epithelial cells to form scales.

Crustae—Scabs of dried blood serum or pus.

Ulcers—Decomposition of tissues.

Scars—Formation of new connective tissue covered with epidemis.

Pruritus is but another word for itching. It is due to an anomaly of function in an otherwise healthy skin and may be either local or general.

Local. Pruritus ani is the most common form as seen in the dog and may be caused by:—

1. Irritation of anal glands.
2. Rectal and other worms.
3. Mechanical irritation as from passage of bones and other foreign matter.
4. New growths of the anus, particularly met with in old dogs.

General. Cutaneous pruritus may result from digestive disturbance, or it may accompany certain organic diseases such as of the kidney, pancreas, etc.

There is a third type of cutaneous pruritus which may be regarded as a *neurosis.* The condition is one of extreme sensitiveness of the skin which, however, appears normal to the naked eye. The slightest touch or scratch of the finger is followed by violent movements of the hind legs, wriggling and crouching of the body. The response to stimulus is more pronounced over a saddle-shaped area of the back, known as the "scratch reflex area." The subject may not show any evidence of irritation except when touched or scratched, and this seems to suggest an irritability of the nerve paths concerned with some of the reflexes. Under this heading may be considered those cases of persistent gnawing at the base of the tail, tip of tail or some other localised

area. The dog will bite through the tissues and self-mutilate to an incredible extent. Irritability of tip of tail may be traced sometimes to faulty docking. If insufficient skin has been left round the inner structures, nerve endings may be included in the scar tissue. Finally, we have the so-called " nervous eczema " in which irritation and exanthema are confined to the course of certain nerve tracts.

Apart from any question of disease, some dogs, notably Pekingese, are habitual scratchers.

Treatment. The first essential is removal of the cause, if discoverable.. Thus, in pruritus ani, this may entail evacuation of anal glands or removal of worms and other irritants. This is followed by the application of sedative dressings and insertion of sedative suppositories. A useful suppository is composed of tincture of hamamelidis and cocaine in a coca butter base.

Cutaneous pruritus may clear up spontaneously, but recovery is hastened by administration of bromide of arsenic in gr. $\frac{1}{24}$ doses, together with mild salines. I have not seen recovery in cases of self-mutilation.

Erythema consists of a flushing and reddening of the skin due to hyperæmia of the capillaries. The capillaries involved are those of the superficial layers of the corium and of the papillary bodies. The condition may be diffuse as seen in white, smooth-coated dogs, or occasionally local. The redness disappears on pressure of the finger and returns after release of pressure.

Erythema cannot be regarded as a disease, *per se*, but rather as a symptom representing the primary stage of some inflammatory condition.

As an independent lesion it may be due to :—

(1) Mechanical influence, such as clipping, as seen in the poodle, or plucking and stripping, as in the close-coated wire-haired terrier, and sometimes in the Sealyham.

(2) Chemical influence, such as bathing with certain soaps, strong dressings applied for some other disease, scalding from urine in cases of paralysis.

(3) Thermal influence, as seen occasionally in the toy breeds, who lie for hours close up to a fire.

Simple erythema is not accompanied by irritation (pruritus) and clears up spontaneously. Sometimes, however, the condition is accompanied by intense irritation, falling of coat, and incessant scratching. There is desquamation of the epithelium and formation of papules which, as a result of scratching, become open sores and these again by infection may become purulent. For illustration, reference may be made again to—

(1) The wire terrier or Sealyham after plucking.

(2) The poodle after clipping.

In both (1) and (2) the etiology is simple, but the later lesions, as seen in the consulting room, are misleading unless some definite history with tissue relations is forthcoming.

Erythema, in some few cases, may be traced to diet and faulty metabolism. Some authorities claim, that toxæmia, either from general infection (*e.g.*, distemper) or from intestinal absorption, plays an important part. Septic absorption from pyorrhœa is another possible factor.

Treatment. Simple erythema requires little treatment beyond removal of the cause. Cases of mechanical origin, such as plucking or strong bath, will also yield to nature if given time. If, on the other hand, the skin is very red and irritable, relief may be obtained from a starch bath. Starch, 1lb., is crushed and made into a cream with cold water, warm water is added up to two gallons and the dog is soaked in the solution for 15 minutes before drying. Bran, 2lb. to the gallon, is a common substitute.

Localised irritation may be treated with a lead and opium, or alcohol and arnica lotion. Internally, mild saline laxatives and febrifuges are indicated.

The mouth, as on all occasions, should be examined, septic loose teeth removed and cleanliness, as far as possible, established. Diet must be regulated according to circumstances.

SEBORRHŒA, as the name indicates, is an excessive production of sebum by the sebaceous glands of the skin. There are two forms, namely :—

(1) *Seborrhœa oleosa*, in which there is a hyper-secretion of oily fluid and the skin is greasy to the touch.

(2) *Seborrhœa sicca*, in which the fat and horny layer of the skin dry to form yellowish grey scales or dandruff.

Dry, scurfy seborrhœa is more frequently seen in the spaniel breeds and in the Chow, and may be generalised or confined to patches behind the ears or on neck, shoulders, base of tail. Such dry patches, with harsh, broken coat are particularly common in the Chow. Greasy seborrhœa is very common in Pekingese and occurs in two forms (*a*) the sebaceous glands may become distended with sebum and may be felt in the skin chiefly along back and sides as hard lumps, varying in size from a small seed to a large pea. After puncture the sebum can be evacuated as a cheesy mass.

(*b*) A greasy, dirty condition seen inside the thighs and on the abdomen. The secretion collects dirt which accumulates round the hairs and these break off. The surface is at first oily, but later becomes dry, with black specks and scales.

Seborrhœa may result from general debility and anæmia, or it may accompany other skin diseases. Little is known however of the etiology.

Treatment will depend upon the type presented. In the dry form, applications of lanoline, or lanoline containing 5 per cent. salicylic acid have been used successfully. In some cases a lotion is preferable, and this may be composed of salicylic acid, glycerine and alcohol or of chinosol, glycerine and water. The proportion of glycerine and alcohol respectively will depend upon the type of case. By some Resorcin is preferred to salicylic acid. A weekly bath should be given with a mild alkaline soap.

Internal treatment consists of a liberal dietary including raw meat. Cod liver oil is indicated in

dry seborrhœa and such general tonics as iron and arsenic.

ACNE is an inflammatory condition of the hair follicles and sebaceous glands originated by decomposition of the products of the latter. Suppuration takes place by infection, so that the affected area presents a mixture of nodules of varying size and pustules containing sanguineous pus. Large purulent areas may result by confluence of several pustules and, not rarely, local necrosis may take place.

The usual site for the disease is on the back of the nose where it presents a typical appearance. It may extend to other areas, chiefly those liable to mechanical irritation such as elbows, extremities, etc. A typical acne is seen in pustular follicular mange. In this case the pus organisms gain access to the follicles already invaded by the demodex.

Treatment offers considerable difficulty if the affected areas are at all extensive. Re-infection is constantly taking place.

Local treatment consists of free drainage of the pustules by incision and pressure followed by frequent and thorough application of tincture of iodine, chinosol and bacterol but best of all, 5 per cent. Burnett's Fluid. The last-named appears to have great penetrating power.

Local treatment alone will give very uncertain results and should be supplemented by either—

(1) A vaccine;

(2) A collosol injection;

or both. Strictly speaking, better results are to be expected from an autogenous vaccine, but good results have been obtained from a mixed stock vaccine, Bio. 820, prepared by Parke, Davis and Co.

Consistently good results have been obtained by intramuscular injection of collargol (colloidal silver). From 2 to 6 c.c. of a 1 per cent. solution are injected every third day into the thick muscles of the hind leg under strictly aseptic precautions. The dog must be very firmly held and the fluid injected slowly by means of a stout needle, taking care that the fluid goes right into the muscle and not under the skin. The subject may show considerable pain, with lameness, for anything up to 24 hours, but no other ill-effect has been noticed.

URTICARIA (nettle rash) is a localised œdema of the skin due to a sudden serous infiltration in the papillary bodies and corium. In the horse and other animals the condition is characterised by the appearance of flat well-defined swellings of the skin all over the body. In the dog, however, this is rarely seen unless as a result of insect bite, stinging nettle, etc.

Urticaria in the dog usually manifests itself as a diffuse swelling of the face and head which may assume enormous proportions, and the eyes become closed by swelling of the lids. Puppies appear to be more susceptible than adults. The phenomenon is usually ascribed to some form of auto-intoxication associated with gastro-intestinal disturbance. In this connection it is known that some individuals possess an antipathy for certain forms of food. At the same time the actual serous transudation is due to dilatation of the capillaries and the original exciting cause must act through the medium of the vaso-motor centre.

Treatment is not always necessary as the swelling tends to disperse spontaneously. A saline purgative may always be given with benefit. Steps should be taken to correct any digestive disorders and a light diet prescribed.

In puppies, treatment for worms may be indicated. If the swelling is refractive, cold fomentations, or friction with alcohol, will be of assistance.

ALOPECIA is the term used to denote the falling out of hair to the point of baldness. It may occur all over the body or be confined to isolated patches (alopecia areata).

True alopecia, as an independent disease, is probably a tropho-neurosis resulting in disorganisation of nutrition of the skin. It is seen in old age and occasionally in the new born. Certain breeds, such as the toy black and tan are particularly prone to baldness. Alopecia is more often a secondary affection associated with derangement of nutrition. Thus it may follow on wasting diseases, poor feeding, starvation, pregnancy and suckling.

Alopecia areata may be confused with herpes tonsurans or with acariasis, but the distinction is easily made by means of the microscope.

Treatment. Secondary alopecia will in many cases clear up when the primary factors are rectified. Thus the result of illness, poor feeding, rearing a litter, etc., will yield to good, nourishing food and tonics.

Alopecia areata is extremely resistent to treatment.

From the clinical appearance it may be impossible to decide whether the condition represents a true baldness from degeneration and death of the hair follicles, or whether it may be a temporary loss of function as from bacterial invasion. Stimulating liniments such as 10 per cent. tincture cantharides in alcohol or spirits of camphor should be tried first. If this fails, an antiseptic lotion such as chinosol, 5 per cent. in aqueous glycerine, 25 per cent., may be applied daily with friction. Success or failure will depend upon the degree of potential activity of the follicle.

ECZEMA. As already remarked, the term "eczema" is used loosely by the layman to describe almost anything. It is in fact a cloak for ignorance.

Eczema is a non-contagious inflammation of the skin characterised by a definite sequence of lesions. These lesions occur in the following stages:—

(1) *Erythema*, consisting of hyperæmia of the skin, proliferation of the epidermis, which may desquamate to form scales.

(2) *Papules*, consisting of the formation of small red papules due to serous saturation of the dermal papillæ.

(3) *Vesicles*, which develop from (2) when the serous saturation is sufficient to rupture the cells of the rete mucosum with escape of fluid to the sub-epidermal layer.

(4) *Moist or weeping stage*, due to bursting of the vesicles either spontaneously or as the result of scratching.

(5) *Pustules* which develop by infection of the ruptured vesicles. By confluence of pustules a sero-purulent patch is produced and this represents the typical condition of "weeping eczema."

(6) *Resolution stage*, consisting of the formation of crusts and scales by drying up of the exudate.

In daily practice, it is seldom possible to follow this sequence of events. Occasionally it is possible to detect two or even three stages when the dog is in hospital under constant observation. Even under these conditions the clinical picture may be distorted by scratching and biting, whereby an early stage may pass directly into a later stage.

The condition throughout is accompanied by acute hyper-sensitiveness, pruritus, and in the later stages by actual pain and constant scratching.

As regards the incidence of the disease, authorities differ. My own experience points to prevalence in the Fox Terrier, Sealyham, Aberdeen and Pug.

As time is limited, classification must be condensed. For all practical purposes eczema may be described as:—

(1) Acute or chronic.

(2) Diffuse or circumscribed.

Chronic eczema may represent the persistence or recurrence of any of the stages described. Usually, however, it appears as a dry scurfy condition, with skin discoloration and pruritus in the old dog. When eczema has once been established, it is impossible to give a prognosis as to the future. The primary attack may be cured, but there is always a tendency to recurrence. Many old dogs suffer from chronic irritability of the skin originating primarily from an attack of eczema.

Circumscribed or local eczema is important as it includes such conditions as:—

(1) Scrotal eczema.

(2) Interdigital eczema.

(3) Dorsal eczema.

(4) Non-parasitic otorrhœa or eczema of ear flap.

Causes. Beyond the fact that certain breeds, under certain conditions, are predisposed to the disease, little is known of the true etiology. There is no doubt that external irritants such as dirt, fleas, lice, soaps, chemicals (applied accidentally or as parasiticides, etc.) are often responsible. Also, in some cases, the condition may reflect some internal derangement as from organic disease, parasites or faulty feeding. These factors, however, in the majority of cases can only be regarded as predisposing causes, and our knowledge remains incomplete.

Treatment varies in detail according to the stage and other individual factors. The first step will be to remove the cause, if patent. It may be necessary at the outset to give a medicated bath in order to remove dirt or parasites. Apart from this, water and soaps are to be avoided.

General treatment, as for acute or diffuse eczema, resolves into the following:—

(1) Local applications.

(2) Restraint from scratching and biting.

(3) Diet.

(4) Internal medication.

Local Applications. The number of agents which have been prescribed for eczema is unlimited. No one of them is specific, for what effects a cure in one case will fail completely in another. The individual case must be studied and a choice made between a lotion, ointment or powder. It is often necessary to change the treatment several times in the course of a case before satisfactory results are obtained.

A great many cases respond best to a lotion, one in common use being oxide of zinc 1 part, alcohol 1 part, water up to 8 parts. To this may be added, in extreme irritability, creolin or liq. picis carbonis. In the early stages and in certain cases of localised eczema a simple zinc ointment is sufficient. This again may be improved by the addition of Ol. Betulæ, 1 in 16. Some cases yield readily to Ichthyol ointment, 10-20 per cent.

In moist or suppurating dorsal eczema, the first step is to clip away all hair and cleanse the surface with hydrogen peroxide. As a dressing a sedative astringent lotion appears to give best results. Silver nitrate, 5 per cent., liq. plumbi, 10 per cent., Burnett fluid, 2½ per cent. are all useful. Lead subacetate, two grains to the ounce, combined with extract of hamamelidis is perhaps better. For chronic eczema sulphur, 2 parts; birch tar oil, 1 part; oil, 16 parts is an effective dressing. Both Resinol and Dimol ointment deserve mention as being very effective in certain cases. The choice of remedies is too wide for full consideration here.

Restraint. The pruritis may be so great and the dog's scratching so violent, that it may be necessary to apply some sort of restraint in the form of leather collars, either square or funnel shaped muzzles or bandages. When inflammation has subsided and healing has commenced it is often better to refrain from dressing rather than to call the dog's attention to the part.

Diet. As compared wtth the human, diet seems to exert little influence. Meat, however, *is* essential, and raw for preference. Starchy and farinaceous food should be restricted. Complete change and variation of diet should be advised.

Internal Medication. Treatment may be initiated by a saline purgative, followed by daily doses of magnesia, triple sulpho-carbolates, or one of the medicinal mineral waters. Arsenic, in its various forms, is very largely used, but in many cases it is contra-indicated. It is useful in dry and chronic eczema, but directly harmful in the acute, moist form.

In certain isolated cases of dry eczema in the old subject, thyroid extract may prove effective, but careful discrimination is necessary in prescribing this or any of the gland products.

In obstinate cases of chronic dry or seborrhœic eczema, accompanied by wasting and debility, Ferarin is to be recommended. This is an easily absorbed combination of iron and arsenic which is given hypodermically, thus obviating any digestive disturbance.

The three regional varieties, namely, scrotal, interdigital and external otitis are the most refractory —treatment in each case being hindered by mechanical factors.

In *scrotal* eczema, the usual dressings may be supplemented by an occasional application of a dusting powder such as boracic acid and tannoform. Steps must be taken to prevent soiling and contamination from bedding and licking by the subject.

Interdigital eczema usually develops towards the under-surface of the foot and so is aggravated by constant contact with the ground. This may be overcome to some extent by the use of an oil silk bag, but bandages should not be used. The average case will yield to the alternate use of tincture of iodine and oxide of zinc in a weak alcoholic solution.

Interdigital eczema is sometimes followed by interdigital abscess, but this condition is quite distinct from the so-called interdigital cyst, which is specific.

In *non-parasitic otitis*, the aggravating factors are chafing and flapping by shaking of the pendulous ear flap, and exclusion of air and ventilation. The condition may develop during the course of a generalised attack or independently as the result of accumulation and decomposition of dirt, secreted wax, or by mechanical irritation.

Treatment follows the lines already mentioned. The ear passage and external ear is first thoroughly cleansed and secretions removed.

In the dry form, iodoform ointment, 5 per cent., is sometimes very effective, while in the moist variety, the two dressings commonly used are :—

(*a*) Lotion composed of zinc, alcohol and glycerine.

(*b*) Powder composed of zinc, boracic acid and iodoform.

Generally speaking, strong, irritant dressings are to be avoided, but in chronic cases, it may be advisable to resort to such remedies as :—Liq. plumbi, 1 in 4—weak formalin solution—iodine in glycerine, etc.

THE MANGES. Mange is probably responsible for more trouble than all the rest of the diseases combined. By trouble I mean conflict between seller and buyer, misunderstanding between practitioner and client, pecuniary loss through outbreak in a kennel, introduction of the disease to a valuable litter by mangy fodder and so on *ad infinitum*.

The mange parasites are microscopical mites belonging to the order of acarina. The only acari which I propose to mention are :—

1. Sarcoptes scabei (variety canis), responsible for sarcoptic mange.
2. Demodex folliculorum, responsible for demodectic acariasis or follicular mange.

Sarcoptic Mange. Diagnosis is easy in the majority of cases. The localisation of initial lesions is fairly constant and characteristic. The areas affected are usually confined to face and head, round base and edge of ears, round eye orbits, hocks and elbows. The disease may extend to other parts of the body, but is usually confined to the extremities and parts least covered by hair.

The specific lesions are first seen as red spots, like flea bites, surrounded by an erythematous area. From this, vesicles or even pustules may develop, which again, as a result of scratching, become raw, inflamed patches.

Throughout there is desquamation of epithelium and falling of hair, with consequent establishment of bald patches. There is always intense pruritus, scratching and biting.

There is no other condition which produces such intense general irritation as mange.

It may happen that diagnosis is made easy through the medium of the owner who, in presenting a scratching dog may admit incidentally to personal irritation. Infection of the human from the dog is not at all uncommon. It occurs more commonly in women, and the usual seats of infection are fore-arms, neck and chest.

Sarcoptic mange should be definitely established by aid of the microscope, but the sarcopt is very elusive and endless scrapings may be examined with negative results before the parasite is finally identified.

In certain cases the disease may not be patent in the consulting room. For one reason, the skin has perhaps been heated by the owner by spasmodic application of some proprietary remedy, and so the acute symptoms kept under. It is possible, in this way, to keep mange in check for years in a kennel, but it is there nevertheless.

Treatment. There is no disputing the fact that the only satisfactory dressing for mange is one incorporating sulphur and oil. It is safe to say that 80 per cent. of cases will respond to the simple combination of sulphur and oil (1 in 8). The essence of successful treatment lies in thorough and complete application from head to toes every third or fourth day over a period varying from three to five weeks. A medicated bath should be given before—in the middle of—and at the end of treatment. In some cases it may be necessary to clip before dressing. The dressing must reach the skin and this may be impossible by reason of thick matted coat.

Various adjuncts to the above basis have been used from time to time. Such are—paraffin, lysol, cresol, oil of tar, mercurial preparations, balsam of Peru, etc. Some, such as tar, mercury, etc., are often used in combination with a soap. Baths, such as sulphurated potash, one ounce to the gallon, may be useful in some cases, but generally speaking, we revert to the simple mixture of oil, sulphur and an alkaline salt for consistent good results.

It was at one time supposed that the stronger the dressing the better the result. This is now known to be a fallacy. A strong irritant dressing is not only no more effective as a sarcopticide, but is directly harmful in that it sets up a dermatitis, which may be more troublesome than the original disease.

In the human, mange of canine origin can be cured in three days, but it is not uncommon for a dermatitis or in some instances a " sulphur eczema " to persist for months.

Among dogs, the same idiosyncrasy exists and it is always better to use the best sublimed sulphur and

in proportion not exceeding 1 in 8. The persistence of an erythematous, scaly, irritable skin after mange treatment is often due to the use of too strong dressings.

Follicular mange is due to the invasion of the hair follicles and sebaceous glands by the demodex folliculorum. It is characterised by falling of the hair, desquamation, thickening of the skin and pustule formation. There is usually very little scratching, but instead, a curious wriggling movement which passes down the body in a wave.

Although classed as communicable, it is transmitted from dog to dog with difficulty, and in this respect differs from the sarcoptic variety. Thus it may happen that some dogs of the same breeding and kennel are affected, while their companions remain healthy. Again, a whole litter of puppies will develop the disease, while the mother, so far as can be seen, remains healthy. Certain predisposing factors governing infection and susceptibility must exist, but are at present unknown. Not infrequently, it is seen after an attack of distemper and it may follow on other skin diseases such as seborrhæic eczema or sarcoptic mange.

Two forms are recognised, namely :—(1) Squamous; (2) Pustular.

Squamous follicular is characterised by loss of hair in patches, varying desquamation of the epidermis, and by an absence of inflammatory changes. It usually occurs round the eyes, on face, neck and elbows, showing little tendency to spread. The skin is sometimes slightly reddened and scaly. The condition occasionally spreads over the body, as bald patches suggestive of alopecia areata or even tinea tonsurans.

Such slight localised reaction is apt to be misleading, but such symptoms, unaccompanied by scratching, should always call for suspicion and the use of the microscope.

Pustular follicular, in contradistinction to the squamous form is accompanied by intense inflammation of the skin which becomes thickened and arranged in folds.

Pustules appear from infection by staphylococci and the subsequent train of ill-effects may be blamed to this infection rather than to the original acari. Whereas the acari are confined to the follicles, the cocci invade the tissues and blood stream, so that, in fatal cases, it is probable that death is from absorption of toxins.

The skin assumes a reddish copper colour, which is responsible for the expression " red mange." Itching and scratching is primarily absent, but by subsequent chafing of the burst pustules, irritable sores may develop.

Further, the co-existence of sarcoptic mange may be responsible for scratching which aggravates the inflammatory processes and tends to spread the disease.

Treatment is not satisfactory. So far, we have no definite or certain treatment. It is not so much that the disease cannot be cured, but that the treatment, if successful may cover a period of months. Many clients will begrudge three weeks for the cure of ordinary sarcoptic mange, so that even three months for follicular is usually out of the question. Where the lower animals are concerned, the treatment of disease is governed by economic conditions.

Before undertaking the treatment of a case of follicular, one must consider :—

1. The form and extent of infection.
2. The general condition of the subject.
3. The value of the dog, either from the commercial or sentimental point of view.
4. The wishes and monetary resources of the owner.

No useful purpose can be served by an enumeration of the countless remedies which have been tried from time to time.

The demodex has no special resistance and succumbs to any effective parasiticide. The difficulty is to reach the parasite situated in the deeply-placed follicle with a more or less sealed opening. Moreover, the suppurative processes are so far-reaching, that it is at once evident that any agent applied to the surface of the skin, must alone be ineffective.

Strong irritant dressings are to be avoided, as by their use, extension of the disease is favoured by infection of an irritated surface.

Treatment, with whatever remedy, depends for success on the method of application. All surrounding hair must be removed and all discoverable pustules *evacuated daily* before dressing. The dressing in question must be non-irritant, but penetrating. In the space at our disposal I can only quote a few, namely :—

1. Burnett's fluid, 5 per cent.
2. Iodine in chloroform, 1 in 80.
3. (*a*) Sodium hyposulphite, 5 per cent ;
   (*b*) acetic acid, 3 per cent.
   (*a*) is applied first and followed after a few minutes by (*b*). This is supposed to result in liberation of nascent sulphur.
4. Ointments such as (*a*) ammon. hyd. c. lanolin ; (*b*) Creosote c. ol. betulæ c. ol. ricini.
5. Ethereal oils, as in Gmeiner's treatment, which is as follows :—A mixture of 5 parts each of ol. carui and spirit with 75 parts of ol. ricini is rubbed in gently with the finger daily and a ½ per cent. sulphurated potash bath is given every eight days.

My own experience is that no outward application is effective alone. In pustular follicular mange, a vaccine is indicated, either autogenous or stock. Excellent results have been obtanied from the mixed vaccine supplied by Parke, Davis. Mention has been made of the use of intramuscular injections of collargol and I am satisfied that this is a step in the right direction.

Whatever method is adopted, good results are to be achieved only by minute and careful application under personal supervision.

In conclusion, I beg to apologise for the incomplete and sketchy nature of this paper, but I hope that

some of the points mentioned may furnish sufficient material for a useful discussion.

Discussion.

Mr. G. H. Livesey, in opening the discussion, expressed great pleasure at being once more amongst old friends in the Midland Division, and thanked the members for having paid him the compliment of asking him to be there to open the discussion. Mr. Stainton's paper, he said, was an exceptionally good one, full of sound practical common sense, and written in such a manner as to be of the greatest use to men in everyday practice. Mr. Stainton had wisely divided the subject of skin disease into two headings, parasitic and non-parasitic, and this was most sensible from a practical point of view. After referring to the general aspect of the paper, Mr. Livesey, dealing with certain details, said he did not agree that pruritus ani was the most common form of itching nor that worms were a frequent cause of pruritus ani. Apart from mange and lice, itching was most frequently seen in dogs (and cats) at the time of change of coat, and it was then rather physiological than pathological, though owing to domestication and insufficient attention many dogs at this time became subjects of skin disease as a result of skin infection from scratching and nibbling themselves. Dirt and neglect were the direct causes of nine-tenths of the skin diseases of the dog. Retention of coat was a condition seen almost daily in practice, and it would repay them to study its treatment. In treating erythema he did not like either starch or bran baths, especially for long-coated dogs. It was often difficult to get the bran out of the hair. Borax or bicarbonate of soda was preferable, and carbonate of magnesia he had found very useful as a mild saline aperient. Seborrhœa was much more common than was supposed, and was often contagious. In those Pekingese, as mentioned by Mr. Stainton, where sebaceous cysts were commonly found, this condition was followed by the formation of sebaceous warts often of a horny nature, and which became so numerous as to make treatment difficult and often inadvisable. Salicylic acid had proved in his hands the most useful means of treatment, in the form of solution in spirit or castor oil, and used as a brilliantine. Resorcin was not to be advised, as it had the effect of turning the white coat of some dogs into a kind of olive green, and he knew no method of removing the stain.

Acne was sometimes followed by bacillary necrosis, a condition most difficult to treat. He would like Mr. Stainton's opinion as to the best method of dealing with it. Urticaria he had very often seen, not as a simple swelling of the head, but in the form of true nettlerash all over the body. The popular swellings soon disappeared, and required prompt treatment if the veterinary surgeon was to have any say in the cure. Alopecia or baldness was most frequently seen in the dry non-pustular form of follicular mange, and differential diagnosis was not easy. Mr. Livesey drew attention to the fact that in many dogs (and particularly brindle and red dogs), where the coat had been lost from some known cause, such as ringworm, sores, etc., it was often difficult to get the hair to grow again; but this was especially so if the skin was bare long enough to become pigmented. He believed pigmentation was a definite hindrance to hair growth, and propounded the theory that there was some connection between pigmentation and several pathological conditions of the skin, and particularly those affecting the growth of coat.

He was not a believer that true eczema was to be found in the dog, except perhaps in cases of eczema of the scrotum, one of the most painful conditions we were called upon to treat. On the other hand, acute impetigo was common, and was amenable to treatment. The so-called chronic eczema of the back (called by some psoriasis) was more frequently the result of chronic irritation from retained coat, or followed on chronic kidney disease in old dogs. He did not believe there was such a condition as non-parasitic eczema of the ear flap. The condition was a dermatitis which arose as a result of fermentation of debris and secretion in the ear, the direct sequel to the presence of ear mites. He agreed that ointments were not much use and should be avoided in these conditions. He found the old-fashioned blackwash very useful on wet surfaces. In dealing with sore ears, one should be careful not to bandage in such a way as to exclude air. It was important to keep the ear flap turned back.

Mange was perhaps the most important skin disease they had to treat, and was probably the easiest also. Sulphur, *properly applied*, was an absolute specific. It was essential for success that one should apply the dressing *oneself*, and treatment must continue for three weeks, even if a cure seemed to have been obtained before that time had elapsed.

It was very remarkable to him how often mange seemed to pass undiagnosed. Either it was not recognised or the practitioner had not the pluck to state the truth. Many dogs were not thoroughly treated and the coat was not clipped in preparation. In this way cases hung on for long periods and the dog as a result often lost its coat, and became pigmented and bald. He had seen many dogs with dermatitis, the direct result of over-treatment, whose owners were still rubbing in sulphur ointment. Cessation of dressing and cooling baths soon restored health, in apparently incurable cases.

The best remedy he had used for follicular was zinc chloride in 4 to 8 per cent. solution, scrubbed in every day with a brush. Collargol intra-muscular injection was also useful. He had had no success with vaccines.

Mr. Livesey concluded by complimenting Mr. Stainton on the excellence of his paper, the interest in which would extend far beyond the Midland, and would be appreciated by all members of his profession.

Mr. H. W. Dawes: I should like, at the outset, to congratulate Mr. Stainton on his excellent paper, which dealt in a very practical manner with a subject of great interest. This is the first time we have had

the pleasure of hearing Mr. Stainton at the Midland Counties Division, and I feel sure it is the beginning of many similar occasions. At the same time, I should like to add my appreciation of the opening of the discussion by Mr. Livesey. Mr. Livesey is an old friend of the division, and I think he realises how very welcome he is at our meetings.

Referring to the paper itself, there are a few points I should like to bring forward. Many cases of erythema are met with which are largely due to the bathing of dogs by their owners in strong solutions of disinfectant fluids, particularly Jeyes' Fluid and Izal. These preparations are frequently used without any regard to necessary dilution. In the treatment of simple erythema, I find that a lotion containing calamine in the strength of 30 grains to the ounce, particularly when combined with an evaporating base, to be of great service.

Mr. Livesey has referred to retention of the coat being associated with generalised pruritis. I find this to be a very common occurrence in certain breeds, particularly the wire-haired terrier, and the Scotch terrier. It is very frequent to meet with great pruritis, associated with retention of a large amount of "dead" coat in old dogs of these breeds and, in the treatment of such a condition, removal of such dead coat is the first step. I am inclined to be of the opinion that such cases are frequently the primary stage in the development of so-called dorsal eczema.

Alpoecia Areata is a widely-differing condition, and I have frequently found it in the Airedale terrier. Mr. Livesey has raised an extremely interesting point in connection with alopecia by his remarks on the part played by pigmentation in the question of skin disease. I am afraid that at present, we do not understand the full rôle played by pigment and pigmentary cells. In the aged Yorkshire terrier one frequently finds chronic skin irritation, and this irritation is often accompanied by small pigmentary new growth scattered about the skin. It is quite feasible that changes in pigmentation of the skin may give rise to an irritation of an obscure nature.

With regard to the treatment of scrotal eczema, I consider that in such cases the application of dressings in the form of an ointment only aggravates the condition; treatment must take the form of a united astringent lotion, followed by the application of a dusting powder containing zinc oxide, boric acid, starch, etc. I find that a lotion containing lead subacetate associated with a small amount of glycerin to be an excellent dressing.

In other forms of eczema, resinol, both the ointment and the soap, is a very useful application. It has a remarkable anti-pruritic effect. Mr. Stainton has also mentioned dimol, which is a phenol derivative, and of low toxicity.

Lastly, a few words with regard to the manges. Mr. Stainton has stressed a most important point when he remarks on the misunderstanding which may arise between ourselves and our clients with regard to mange. Sarcoptic mange of the dog is a condition in which we may rely upon a sulphur and oil dressing with confidence. But one more thing is required in treatment, and that is the absolutely thorough and conscientious dressing of the patient. In the treatment of such cases in an infirmary, this dressing must *not* be relegated to other persons: if the latter is done, one may be sure that the necessary care will not be taken. It is no uncommon occurrence for a dog to pass from one veterinary surgeon to another, accompanied by a dissatisfied owner, simply because a cursory diagnosis of mange has been made, together with a more cursory and casual method of treatment.

I know of nothing more calculated to increase the reputation and sale of proprietary preparations and quack dressings among the dog-owning public than the treatment of cases of sarcoptic mange in a slipshod, haphazard fashion, with the time of treatment running into many weeks, and at the end of that time a dissatisfied client and an uncured dog.

Another point: wherever possible in the treatment of mange, the dog should be clipped from head to foot. Sometimes, after an animal that appears to be only slightly affected is clipped, it is remarkable the extent to which the disease has spread; and the application of a remedy merely to the affected part is not likely to meet with success.

With regard to follicular mange: diagnosis in the squamous type is sometimes admittedly difficult, but in the pustular type one should always confirm one's suspicious by microscopical examination. The demodex in the pustular form is always easy to recognise.

I am afraid that my experience of the treatment of follicular mange has not been fortunate: the general condition of the dog and the length of time required in treatment are conditions that must be borne in mind, and these frequently activate against what might be a successful issue.

Mr. W. TRIGGER thanked Mr. Stainton for his most interesting paper, and said he would like to ask whether the essayist had had any experience of a form of eczema affecting the feet of dogs as a sequel to distemper? He himself had observed this more particularly in foxhounds during an epidemic of distemper, and it was a very troublesome complication, though fairly amenable to treatment.

Mr. P. M. EVERSHED: I have read Mr. Stainton's practical paper with very great pleasure, and I am sure we all owe him our best thanks for coming here this afternoon to tell us all about it.

On the whole, skin diseases of the dog do not give me very much trouble; but there are several forms about which I should very much like to have Mr. Stainton's opinion:

I. That form of dry eczema, causing a good deal of irritation, characterised by small scaly pimples. The scale can be picked off, leaving a shiny surface. Often seen in terriers and Sealyhams.

II. That form which shows itself as circular patches. The hair is broken and thin, and the skin may be slightly thickened and scaly. It is usually seen in puppies and young dogs. What is this?

Is it the sqamous form of follicular mange, or is it ringworm? Sewell says it is due to a vegetable parasite. I have never been able to find the parasite of follicular mange in these lesions. I find it very difficult to treat; but these cases almost invariably do recover if given time. Has Mr. Stainton a specific for these cases to enable us to effect a quick cure?

III. With regard to follicular mange. It is an admittedly easy matter to find the parasite in the pustular form; but I have often had some difficulty in finding it in the squamous form. In the former I inject the pustular with a 25 per cent. solution of carbolic acid, and have had some very good results.

Mr. H. S. Reynolds: I should also like to thank Mr. Stainton for his very practical paper.

I think the practice of owners frequently washing their dogs is conducive to eczema, especially if they use Jeyes' Fluid, of which a great number are very fond. I consider Jeyes' very unsuitable. For scrotal eczema I have found a lotion of weak strength of liq. plumbi and liq. carbonis very good, and prefer in any case, if possible, to use a lotion in preference to a greasy dressing, but, as Mr. Stainton says, what will effect a cure in one case will fail in another. One form of eczema Mr. Stainton did not mention—eczema of the lips. I should like to ask what he uses, as I have found this most troublesome to treat, as the dog constantly licks the parts. I quite agree with Mr. Dawes that it is no good attempting to treat a case of mange before clipping the dog all over.

Mr. W. H. Brooke said: I would like to join with previous speakers in a tribute of thanks to Mr. Harold Stainton for his very able and useful paper. Skin diseases in the dog now form a large part of our daily practice, and on their proper recognition and correct treatment a good measure of our reputation depends. The paper is so comprehensive that it is somewhat difficult to concentrate upon it, the area which it covers being so wide. Almost any one of the subjects touched upon might have been expanded so as to have formed a subject sufficient in itself. In the reading of Mr. Stainton's paper, many of the points which I had marked for comment have been dealt with by Mr. Livesey and the speakers who followed him, thereby to rendering further comment unnecessary.

I think the division into parasitic and non-parasitic is a good practical start. Much in the latter class is of a systemic nature, and hinges largely upon circulatory and digestive aberrations. Injudicious feeding during the first few months of life, which is so often irrational (especially in the hands of the amateur), and which lays the foundation for a permanently disordered mouth and digestion, materially predisposes, I am sure, to the skin troubles which follow in later life. Disorders of the circulation and the heart itself are also important factors in predisposition, and, with the digestive causes, are mainly responsible for the production of the autogenous poisons in which many non-parasitic skin troubles originate—not perhaps, to the same extent as in other organisms (in which the skin is more actively excretory), but the sebaceous glands although not purely so, are finally excretory, and an abnormally-formed secretion would act in these, quite conceivably, in a similar manner to that which influences the more actively excretory sudoriporous glands. Irritability of the tip of the tail is not always due to faulty docking, for I have seen it worse in the Pekingese than perhaps in any other breed accompanying rectal abscess, and so badly gnawed as to become necrotic and necessitate amputation. For such cases, which are often trying and persistent, I have used an injection of a mixture of glycerol of tannic acid and hamamelis extract, combined with a mild antiseptic. As general treatment I employ tonics such as syrup of glycerophosphate, calcium sulphide and antistreptococcic vaccines once a week, the treatment to the tail being quite incidental. I cannot agree that erythema of the back is caused simply by rubbing, as Mr. Howard Dawes suggests; but consider that it is due to localised eruption over nervous areas. How commonly do we find such circular patches a short distance anterior to the base of the tail and often nowhere else. These quickly recover if cleansed with a strong solution of borax, and afterwards treated with borated glycerine combined with a little simple general treatment.

In seborrhœa, or any other condition in which there is much epithelial proliferation, I usually commence with a cleansing and fairly prolonged application of a warm solution of borax and bicarbonate of soda until the healthy skin surface is exposed, when the alkali is eliminated.

The essayist says that urticaria is rarely seen in the dog. I have, however, met with it, not uncommonly, in puppies, following ingestion of foreign matter as coal, cinders, wood fibre of mats, etc. The eruption is confined to the head and throat, and in a recent case, I witnessed the head of a fox-terrier increase by about a third its size in twenty minutes. When the owner brought him in, I noticed a developing eruption on the right side of the face, and in the short time mentioned the whole head became generally swollen.

Regarding alopecia there is, I am afraid, not much to be said. It is not uncommon in Pomeranians and Yorkshires, and the owner's patience is exhausted long before the time necessary to restore a normal condition. A white Pomeranian, about eight years old, which had lost the whole coat excepting from the head about eighteen months ago, now has a complete normal coat. The skin was periodically cleansed with coal-tar soap, and three or four times a week treated with borax and warm water, one tablespoonful to half pint, dried and dressed lightly with lanoline. Quinine iron and arsenic—quite small doses of latter—were given daily for about a fortnight, with intervening fortnightly intervals. The dog was otherwise healthy and last spring grew a normal coat even after so long an interval.

One condition which Mr. Stainton has quite pardonably omitted is urinous eczema. I have seen but few cases; it affects both horse and dog.

A tenacious discharge issues from circumscribed patches of skin, with a distinctly urinous odour. It is usually due to grave functional disorder, and in my hands has never recovered.

In a case which I treated at my own kennels, upwards of twelve months ago, it affected a spaniel dog eight or nine years old. Other symptoms were excessive thirst and profuse urination, with rapid loss of flesh, although the appetite was fairly good. On *post-mortem* both kidneys were found to be greatly diminished in size, shrivelled in appearance, and when cut into were almost cartilaginous in consistency, the result of chronic nephritis. How the profuse watery urine which was passed in such quantity managed to get through them remains still a mystery to me.

In scrotal eczema, when the part is so difficult to protect, and is constantly chafed and soiled in the sitting position, and when in old dogs with a very thin skin and a pendulous condition of these parts there is often considerable hæmorrhage. I have found, after the primary acute irritation has passed off, that a fairly thick coating of collodium flexile is very useful. The dog must, of course, be restrained until it is quite set, which only occupies a few moments.

Cases of sarcoptic mange are frequently contracted from the cat. Mr. Stainton's symptoms read like the classical ones of eczema from which it is not always easy to distinguish, as the parasite is sometimes elusive. I have found mange and ringworm running concurrently both in the dog and horse.

My experience of follicular mange is similar to that of most of my confrères. If far advanced it is not worth treating. I have had, however, a few recent recoveries, and have found an ointment of one part ung. hydrarg. nit. fort. to four parts of ung. sulph. perhaps the most effective local application, and Donovan's solution, in five minim doses, a useful medicine. Cases in which large areas are affected with confluent suppuration are hopeless.

Mr. CORMACK: I should not like the opportunity to pass without adding my thanks to those of the previous speakers to Mr. Stainton, for giving us so useful and practical a paper on a subject of such great importance to those who are called upon to treat the diseases of the dog. The subject covers a very large proportion, possibly about 50 per cent. of the cases one meets with in canine practice.

One point occurs to me which has not been dealt with by other speakers, and that is in connection with follicular mange, viz.: the more or less characteristic odour which one finds in the majority of cases.

Mr. STEELE BODGER: I should like to add my meed of praise to that of the previous speakers, and to thank Mr. Stainton for his excellent and very useful paper. If he has overlooked any detail in his paper we have surely had it from Mr. Livesey, who opened the discussion in such an able manner.

I should like to ask Mr. Stainton if he has any knowledge of oil of cevadin, particularly with regard to its application in the treatment of follicular mange.

I have not found it possible to procure the drug in this country, but whilst attached to the French Veterinary Hospitals, I had some considerable experience of its use in treating the various manges in the horse. All these cases of mange were very advanced; often the body was hairless and the skin dry, tough, cracked and bleeding. After the animal was washed, scraped and dried, a small quantity of huile de cevadille was well scrubbed into the skin. One dressing was usually sufficient; never more than two were required.

The results were extraordinary: itching ceased, the skin became soft and pliable, and, most noticeable of all, the new hair grew with mushroom-like rapidity.

Several of the members have remarked upon the great difficulty experienced in promoting the growth of hair in certain breeds of dogs, and it has occurred to me that this drug might be usefully employed in that connection.

THE REPLY.

In reply to the discussion, Mr. STAINTON thanked the President and members, first for the honour of being invited to read a paper to the Midland Division; second, for the very kind reception and interest evinced in the paper; and, third, he wished to thank all those members who had contributed to such a useful discussion.

In reply to Mr. Livesey—Mr. Livesey discounted rectal worms as a cause of *pruritus ani*,—he could not agree on that point.

Regarding the administration of arsenic bromide, this *was* dispensed as a tabloid, and so obviated errors in dosage.

In connection with the causes of pruritis, Mr. Livesey had raised the very important question of shedding and retention of the coat, and to his remarks were added the very sound and practical views of Mr. Dawes, junior. In these days of breeding and showing it was important that the veterinary surgeon should be *au fait* with the details of the top coat, under coat, and the technique of stripping, etc.

As regards bacillary necrosis, one had to agree with Mr. Livesey that it was a most difficult condition to treat. So far as he was concerned—apart from excision of necrosed parts—the best results had been obtained from chromic acid 10 per cent., and perhaps chloride of zinc 5 per cent.

Mr. Livesey was inclined to connect alopecia with pigmentation—possibly there was something in this association. One might reasonably assume that the loss of balance of heat passage in a bald skin might be to some extent corrected by pigmentation. On the other hand, it was to be remembered that pigmentation, melanosis and melanomatous tumours usually occurred in dogs where red or tan predominated in coat colouration, as, for example, in Yorkshires, Irish terriers, Airedales, etc. Alopecia, on the other hand, occurred in any breed.

Mr. Livesey had a theory that, in old dogs, some skin affections were closely connected with kidney deficiency. It was true that the majority of old dogs suffered from interstitial nephritis, but, from the

physiological standpoint, it was difficult to connect this with the skin in view of the limited excretory function of the latter.

On the subject of mange Mr. Livesey deplored the number of undiagnosed cases, but incidentally he made the remark that possibly some practitioners were diffident about using the word "mange." Later Mr. Dawes, junior, among his other pointed and useful observations, stated that we should not temporise when mange was obvious.

True as this might be, there were occasions when it was not policy to call a spade a thing with which you dig. To a certain class of client the name was offensive, and it was better to treat the case under a synonym.

In reply to Mr. Aston, dimol was a phenol body, and non-toxic. It could be used in large doses as an internal antiseptic, as an ointment for external use, or, in the syrup form, as a mouth wash. It was to be obtained from the Anglo-French Drug Co., Gray's Inn Road, London. To test its non-toxicity, one had given very large doses to young dogs, and also to cats, who were particularly susceptible to phenol bodies. In answer to the second question, bandages were not advocated, because they produced a soft spongy condition of the foot. An oil-silk bag was better in allowing ventilation. Mr. Dawes' remarks had been acknowledged in his reply to Mr. Livesey, but there was one other point with which he was in agreement, namely, that an ointment was contra-indicated in scrotal or any other moist form of eczema. In reply to Mr. Brooke, he thought that the majority of rectal abscesses were due to infection of the anal pouches, and periodic evacuation of the latter might obviate the former.

There certainly were obscure cases of *pruritus ani*, as, for instance, in the case of so-called "whirlers." He remembered a Pekingese who showed violent irritation and whirling at every period of œstrum. The cause was not discoverable. The chronic suppurating anal pouch of the old dog would sometimes yield to injections of tincture of iodine. By everting the anus, the duct could be discovered and a fine nozzle of a syringe introduced. He doubted if one could gain much by comparisons with human dermatology. In the dog the skin played little part in excretion. Sweat glands were only few and localised. Had never seen urinous eczema in the dog.

Mr. Reynolds had rightly remarked that a great deal of trouble was due to the use of strong baths and concentrated solutions of Jeyes, etc. He was probably correct in calling the labial eruption eczema, and agreed with him that it was not easy to treat. Zinc sulphate and boracic acid applied frequently as a weak lotion was helpful.

Mr. Evershed had drawn attention to small bald patches on young dogs. No doubt it was a specific condition possibly due to a vegetable parasite. In treatment lime and sulphur was used by some, and 2½ per cent. to 5 per cent. Burnett was also useful. Squamous follicular had to be remembered in differential diagnosis; one's experience corresponded with that of Mr. Evershed, in that the demodex was not always easy to find in squamous follicular mange.

The hypodermic injection of carbolic acid was one of the recognised treatments, but some individuals were susceptible to carbolic acid, and care was necessary.

In reply to Mr. Trigger, it was not uncommon to get a curious eczematous condition of the skin as a sequel to distemper. It seemed to have been more than usually prevalent during the past year. Very active treatment was not necessary as a rule.

Mr. Steele Bodger's information as regards oil of cevadin was very interesting. It would be worth enquiring of the Anglo-French Drug Company whether or not the oil was obtainable.

He agreed with Mr. Cormack that the odour in follicular mange was sometimes strong and characteristic.

Rickets in Domestic Animals.*

By Henry Gray, M.R.C.V.S., Kensington.

Rickets is a disease of the general sytem arising from malnutrition during the period of rapid growth and before the cartilages of conjugation have become effaced and solid union of epiphyses with shaft of long bones taken place.

It is characterised by general disturbance of health and softening of the bony skeleton with bending of the long bones and consequent deformity of the limbs.

It should not be confounded with achondroplasia and imperfect osteogenesis, both congenital conditions arising during intra-uterine life; nor with osteomalacia, osteoporosis, osteomyelitis, osteoperiostitis, osteo-arthritis, or other bone diseases which occur after the bony frame-work has become fully developed; nor with bassetism, which is a normal variation propagated by selection and heredity.

Although it may appear in every animal species in confinement, it occurs more frequently in the heavier or more lymphatic types or breeds of domestic animals than in the small active breeds. It prevails in frequency in domestic animals in the following order: dog, pig, goat, fowl, pigeon, lamb, camel-calf, rabbit, calf, foal, and least of all in the cat. In dogs it is seen more in the Great Dane, St. Bernard, bloodhound, retriever, collie, greyhound, deerhound, borzoi, bulldog, and whippet than in the fox terrier, Irish terrier or smaller or more active breeds. In pigs it is seen more in the middle-whites or their crosses than in the other breeds, especially the black ones: in goats, in the Nubian and its crosses, and in continental breeds than in the native common-bred goat; in fowls, in the long-leg heavy breeds; in pigeons, the heavy Mondain breed, and in rabbits, the Flemish giant.

In puppies, pigs, goats, lambs and chickens it usually appears about the age of ten or twelve weeks, and rarely after they have turned four and a half months. In kids it may recur after six months if

*Presented to the Central Division on January 3rd, 1924.

replaced in surroundings in which they first developed the first signs of the malady.

Although the disease may appear before weaning, the symptoms of it are usually not noticed until the young animal has been separated from the dam for some two or three weeks, when it may be observed to be not thriving, is less lively than it is ordinarily, disinclined to move, or progresses with some difficulty. The joints, especially the humero-radial, the carpal, the stifle and tarsal joints seem enlarged and knotty, and the shafts of the long bones seem curved and short. The general condition of the animal becomes worse, the coat stares, and is dry and lustreless, and the skin is pale, dry and scurfy, or even shows eruptions. Not infrequently the abdomen is distended or pot-bellied, and the skin covering it has a translucent appearance. The animal, although seemingly tired, has restless or stiff movements, and assumes the recumbent position, from which it does not like to be roused. Some animals cry out with pain when made to change their position or on their limbs being manipulated. Pigs, lambs and kids often kneel on their fore limbs with the hinder part of the body raised. This may also be seen in dogs. In certain instances, and especially in lambs and kids, there is paraplegia, or the back is arched. In fowls there may be lordosis or scoliosis; this is very rare in other domestic species. The second dentition is usually delayed, and the newly-erupted teeth in carnivora may show erosion of the enamel, in the transverse or vertical sense, especially of the incisors. The erosion has a notched or grooved appearance, and is unlike that seen arising from distemper, when it is wide, and has a very irregular outline. Erosion of the enamel is, however, not very frequent.

The bending of bones of the limb may take an internal, external or posterior, rarely an anterior, direction, giving the animal a bandy or bow-legged appearance, or causing him, as is frequently the case with collie pups, to walk on the posterior surface of the metacarpal or metatarsal region as plantigrades do. In the Great Dane and other heavy breeds, the humeri and femora become so curved that they fracture under the weight of the animal. In the greyhound class of dog the radii and ulnæ and tibiæ are liable to break. This fracturing may be witnessed in several puppies of more than one litter in the same kennel. During progression there is often a characteristic rolling gait caused by the animal throwing weight first on one limb and then on the other, and the breast bone almost coming in contact with the ground.

In the calf, young camel, kid and foal the radii and meta-carpi become bent, giving the animal a bandy-legged, bent or knock-kneed appearance. There is often great lameness, so that the animal rests on the points of the toes. In all species the feet of the hind limbs are turned outwards, and the points of the hocks approach one another (cow hock).

The ribs at the sterno-costal region are frequently beaded or knotted, and the middle portions of them are turned inwards, giving rise to a longitudinal shallow furrow on either side and a transverse constriction of the chest, the walls of which approach one another, and form a prominent and sharp sternum. In fowls the sternum often forms one or more curves.

In pigs, and rarely in dogs, the skull especially in the zygomatic, nasal and upper maxillary regions, becomes swollen and soft. The nasal channels become narrowed giving rise to a snuffling sound during inspiration and expiration. The teeth in such cases in the dog may be turned out laterally, and meet one another on the internal lateral surfaces. This is brought about by pressure of one jaw against another during feeding. These cases are often accompanied by scurvy, with purpuric or hæmorrhagic lesions when puppies are fed absolutely on raw meat without fat and bone or any other material for some time.

The stature of the body is low, often giving the animal a dull and clumsy appearance, resembling that of the dachshund or basset hound. In the fowl and pigeon the epiphyses of the long bones of the wing and leg are thickened and bent, and often the tarso-metatarsal region rests on the ground, the bird being unable to stand.

The degree of curvature of bones and enlargement of the epiphyses varies according to the time that elapses before treatment is adopted. In some dogs there is very little enlargement of the joints and curvature in the fore limbs and none apparently in the hind limbs. There may be very little disturbance of the general health beyond the animal showing a constriction of the sternum and false ribs and a distended abdomen, and endeavouring to throw much more weight on the hind limbs than on to the fore limbs. There is no arthritis in rickets, unless it arises as a complication.

Now what is the cause of this specific malady? More than 100 years ago (1817) Blaine stated that cleanliness, good air, free exercise, and wholesome food will commonly prevent it; they will also amend it in those already affected. Twenty-four years later (1841) he said: "It is occasional when it meets with the circumstances of confinement, bad air, filth, and unwholesome food, or the milk of an unhealthy mother." He looked upon it as also being hereditary. But he had included bassetism under the denomination of rickets, and that is no doubt the reason of his asserting it to be hereditary. William Robertson, less than forty years later, attributed it to lack of free exercise, bad food and in-and-in breeding. Woodroffe Hill in 1878, imputed inter-breeding and in addition, or independent of it, bad food, impure air, close confinement and over-feeding or insufficient food. And he states: "remove, however, all these predisposing causes, allow good food and plentiful fresh air and cleanliness, *but deny exercise,* and the result, i.e., so far as the deformity of limbs is concerned, will be precisely the same—not from any deficiency in the structional proportion of bone, but from neglecting rules necessary for symmetrical and proportionate growth. Animals so circumstanced are like unpruned trees, the trunk is being fed,

and the branches allowed to grow as they may. The inclination of heavily framed puppies to lie down, if not at liberty, is well known, and this is especially the case with mastiffs. The consequence is that the body becomes too heavy for the limbs to support; the latter, the bones of which it must be remembered are not at this age set, give way under the superincumbent weight, knuckle over or bend outwards; and it is this condition, arising from the circumstances named, which is frequently mistaken by breeders and rearers of dogs for rickets."

He advised hygienics, bone or egg shells, cod liver oil and exercise, and if necessary, compulsory exercise, which he considered absolutely necessary.

Three or four years later Mr. (now Sir) J. Bland Sutton investigated this disease among the wild animals confined in the Royal Zoological Society's Gardens at Regent's Park, and his conclusions as to its etiology are very much the same as those of the previously mentioned authors. This last authority advised (1883-84) cod liver oil and bony material for young lions. Baxter, in 1881, suggested that the disease was due to a deficiency of fat, and Cheadle, in 1888, stated that it was a dietetic disease, and that the chief defect in the diet was want of animal fat, and he treated his cases in children with cream and cod liver oil.

At the Paris Central Society of Veterinary Medicine, on 26th March, 1903, Moussu, Professor of Cattle Pathology at the Alfort Veterinary School, brought forward facts to show that it was, in pigs, an infectious disease. He placed a healthy young pig with one affected with osseous cachexia or rickets, and it contracted the disease. Another young pig, put in the same place, which had not been disinfected after the other two pigs had vacated it, also developed the malady. Inoculation under the skin of an emulsion of marrow obtained from a long bone of an affected pig reproduced the disease in a pig. The marrow was seemingly only virulent at the commencement or early progress of the disease; it disappeared as soon as there was an improvement in the general condition of the animal. In 1908 Finlay, of Glasgow, published the result of his experiments on this disease commenced at 1906. He put forward the theory that: by confining young dogs and depriving them of exercise, rickets was invariably induced, although their diet was beyond suspicion, the air which they breathed pure, and their kennels were kept scrupulously clean, whereas controlled animals allowed exercise, but otherwise similarly treated, did not become affected.

Mellanby, in 1918, brought forward experimental evidence to show that rickets was due to deficiency of fat in the diet, not because of the fat itself, but because there was linked to it an antirachitic vitamine. His summary is: "Exercise has an antirachitic effect in puppies, but this action is not only subsidiary to diet, but even the possibility of exercise is directly dependent on the quality of the diet; that puppies during absolute confinement will not develop rickets if the diet is good; that puppies allowed unlimited freedom will develop rickets, on the rickets-producing diets used in his experiments; and that rachitic puppies in confinement can be cured by the addition to the diet of whole milk, cod liver oil and egg yolk (substances rich in the antirachitic vitamine), and more especially if meat is also present in the food.

The Deficiency in Calcium theory has had a very long innings as an accredited cause of rickets, in which disease the calcium salts are constantly being eliminated by the urine. This disease may also arise when the foods contain ample lime salts.

It is said that absence of light is a causative factor of rickets. But generally when animals are kept in dark places these places are confined in area and often damp. On the contrary, I have seen rickets develop in greyhound pups when exposed all day long to daylight and to fresh air for twenty-four hours in a pigsty standing by itself in the open, and not overshadowed by trees or other buildings. These puppies belonged to a veterinary surgeon, whose pigs were also rickety at the same time, but housed in another building.

Dogs suffering from distemper frequently develop rickets, in fact, in 90 per cent. of my cases it has occurred during that disease. Why large, heavy or long-legged dogs develop the disease more than the small dogs in confinement and otherwise fed in the same way, I think is due to the fact that small dogs take a very great deal of exercise in a very small space. It is the same with cats, in which rickets are a rarity in spite of their being confined and fed in a manner similar to small dogs. Kittens climb in their cages, and are ever playing, distorting their elastic framework in every way.

Young animals during the period of rapid growth instinctively play, gambol, jump, climb, roll over in all manner of ways, gallop, or prance about; they also exercise their jaws by nibbling, tearing, breaking. This has a purposeful action ordained by nature—the development of the muscular and bony framework. The denial of this playful attribute cannot be but injurious to the system. Walking exercise is not the same thing, because in this the movements are limited, and the whole framework is not exercised fully, some structures being exerted or having strain put upon them, whilst others remain inactive. Exertion must be beneficial to nutrition, that is, if the food ingested contains all those elements necessary for the well-being of the body. Swift animals have bones with denser compact tissue and less cancellated tissue, and finer and harder muscles and tendons than slow-moving animals. This is seen in the young racehorse and deer, which move at a very rapid pace even in early life. This early rapid pace makes a demand on the system to supply material for strengthening or hardening the tissues. In broken bones, friction by movement demands a quicker supply of material to repair the damage. This is better seen in the sluggish repair of a fracture when in splints; remove the splints and allow the animal to use the limb, and repair soon takes place. Exercise has a fortifying influence on the bony framework, in fact, on the

whole system, during the period of rapid growth, and it should keep pace with the intake of food so that the weight of the body does not increase at a greater pace than the limbs develop to bear that weight. Every breeder of large dogs knows that however well he feeds his puppies, gives them cod liver oil and bone meal, they will become rickety, unless he gives them free exercise, especially during that period when growth is taking place rapidly—from ten weeks to five or six months. After four months there is less liability to rickets than under that age, when they are growing rapidly and putting on weight. I would like to mention that some puppies keep small but are otherwise healthy and well-proportioned up to four or four and a half months, and then begin to grow rapidly, and not rarely become very big specimens of their breed. This has, however, no reference to the subject under discussion.

Dogs being kept long on the chain and in kennels too low for them to stand upright in them are frequently affected with rickets. This fact was taken advantage of by bulldog breeders thirty or thirty-five years ago; they knew very well that if they allowed their puppies exercise, they would grow too straight in the limb, a point discarded as useless in those days; they wanted the limbs curved and wide apart at the shoulders.

It is the same with young goats, especially those of improved breeds. Unless they have their freedom to climb, jump, etc., their limbs bend in all manner of shapes and often become very painful. Damp, dark, and badly-aerated places are usually constricted in area and are generally associated with continued confinement and food deficient in all those elements necessary for the building up of the rapidly-developing system. Small places and bare, slippery, hard wooden floors are not good situations for large, heavy, or long-legged puppies, goatlings and chickens, etc., to manœuvre in every position necessary for the proper development of the muscular and bony framework, and in consequence rickets is frequent in such even when they are kept scrupulously clean, dry, well aerated and exposed to daylight and sunlight.

In lambs, rickets or a disease akin to it frequently develops when grazed on reclaimed moorland or when fed on turnips or on trough food. Before the moorland was reclaimed and planted with luxuriant grasses, etc., the disease did not develop. Why it should develop in some lands and not in others is inexplicable. Perhaps all lambs had a certain amount of alteration in the bones, but not sufficient for the bones to bend. Why enzootics of fractured bones occur in calves and colts remains unexplained. Robertson, who more than fifty years ago had great experience with the disease in lambs, negatived the lack of lime salts theory on the grounds that chemical analysis did not show that lack. Then we come to goats. This disease is very frequent in them, especially in towns or when confined in small spaces, or on the chain, in spite of the fact that they have a great variety of food, fresh and concentrated.

Now, is this disease the same as osteomalacia in the adult animal? Sir John Bland Sutton forty years ago found both diseases in monkeys. Both diseases have been found in sheep, horses and cattle, young and adult, at the same time. Much reliance is nowadays placed on the histological and radiological character of the bones, to differentiate one condition from the other.

When we see animals fed on foods containing all the so-called vitamines developing rickets and those fed on food not containing such vitamine element not developing the disease, it makes one doubt that a deficiency of vitamine element is the paramount cause. When we see animals confined but constantly exposed to sunlight or daylight develop the disease we cannot attribute it to the absence of sunlight or daylight or fresh air.

Many animals, as moles, bats, rats, mice, rabbits, foxes, etc., are nocturnal animals, and rarely see daylight or sunlight, and yet we do not see them develop rickets unless confined and perhaps fed on unsuitable or unnatural food.

We cannot deny that food deficient in some of those elements necessary to sustain and build up the system of the young developing animal is a great factor in this as well as many other morbid conditions. In my early life I had great experience with calves fattened for veal, penned up and fed on nothing else than the milk they sucked from their mothers for three months before they were killed. And yet I never saw rickets in such. So I am forced to admit, as I did admit at the National Veterinary Medical Association meeting held in London, 1910, that lack of exercise could not be admitted as the absolute cause of rickets. I asked at that meeting: "Did children in Arctic or Sub-Arctic regions, where they must necessarily be confined in consequence of the low temperature during the greater portion of the year, develop rickets?" "Probably they are immune, because their staple diet generally consists of a great amount of fat."

Probably what is a suitable diet in Japan, China, India, etc., is an improper or injurious one in temperate climates, and still more injurious in Arctic or Sub-Arctic regions, and *vice versa*; much depends on climate and soil. Animals that are born and reared on one soil get accustomed to that soil, and if reared on another soil they would not thrive, although the animals bred there generations would develop well. It is the same with systems of feeding, management, etc. It is the same with plants as with animals. French army veterinary surgeons found that their European and Algerian horses could not thrive in Cochin China until they were fed on grain and forage imported from the countries of the origin of the horses, and that the quality of the food depended on the quality of the manuring of the soil upon which the foods were grown. This is a very important factor in nutrition.

Dogs of one breed can thrive on one system while another breed would become stunted on it. In Ireland people thrive on potatoes, in Scotland on

oatmeal, both foods said to be low in vitamines or antirachitic factors, and Englishmen on beef and pork. The hereditary habituation of our cells and organs to a particular dietary plays as much part in our well-being as the chemical nature of the food forming that dietary.

Now, is imperfect osteogenesis a form of rickets due to the lack of elements in the mother's food necessary for building up or laying the foundation of the framework of the fœtus-in-utero? It may be so, but the commonest factor in its etiology seems to be heredity, because for more than two thousand years it has appeared in dogs of Oriental origin and their crosses and descendants with short faces and more or less short limbs, fewer teeth and a less developed sagittal crest. It is the general condition in Pekingese, Japanese and British toy spaniels, bull-dogs, pugs, griffons bruxellois, Mexican sacred dogs, etc.

Is this heredity of imperfect osteogenesis the consequence of habituating for many generations the embryonic cellular elements of the ancestors of short-faced dogs to faulty nutrition such as rice feeding would entail? Microbes, plants and even animals may transmit hereditarily-acquired characters brought about by altered nutrition.

The heredity of rickets is more due to the parent being brought up under similar conditions to those of her offspring; it is not inherent but only a pernicious traditional system of feeding or management that has been passed on from one generation to the other by the breeder. This is a condition favoured by faulty surroundings, and the heavier breeds of all species are more likely to be adversely influenced by such environment.

Stockbreeders from time immemorial have known the value of freedom, fresh air, sunlight and nutritious food for their infant stock, and the breeders of the heavier and fleet types know too well the injury that is done to their young pups if they do not give them a wide range in which to play, etc. Walking exercise is not sufficient, it is more injurious than beneficial. Rough, uneven, ground, with all sorts of obstacles over a wide area, forms the best playground for the young of all species. But proper stimulating or nourishing food is necessary to give the young animal the spirit to play and exercise his mind, body and functions.

If the advice of Blaine and subsequent British veterinary surgeons is put into practice, rickets ought to be an unknown disease in these Isles. When it usually occurs it does so chiefly among the animals belonging to inexperienced people. Practical farmers and stock keepers or breeders have had handed down to them by hereditary tradition the method of rearing young animals so as to avoid such conditions as rickets, osteomalacia and other nutritional diseases. With a newer class of stock breeder or keeper there is not that traditional teaching born of the accumulation of experience of past ages. They came into untrodden arena with ideas how to feed their animals cheaply, and in consequence they often give foods that have not all those elements in them necessary to maintain their animals in good health. In fact, their rations are unbalanced.

As to curative treatment, there is none better than that recommended 107 years ago by D. P. Blaine, who knew the value of bones for dogs. There is no doubt that the fat in bones, not the lime salts, plays a great part in that nutrition of the dog; also the mechanical action of the bony material on the teeth, gums, stomach, intestine and anus plays a great part in the wellbeing of this animal. For more than seventy years cod liver oil has been used in the feeding of cattle, sheep and pigs, and in the treatment of rickets, osteoporosis, and other nutritional diseases.

Certainly the observations of Sutton, Cheadle, Finlay, and especially those of Mellanby, have done much to define with more or less precision the relative values of the various factors that play parts in the etiology of rickets. But the practice of veterinary surgeons and stock owners in the past has been in advance of theory. Nevertheless in these days of advancing civilisation, extending of so-called education and widening of literature the public are more and more opposing nature in their everyday lives, and in the treatment of their live stock. In consequence it is necessary for science to keep pace with the evils of our modern ways and surroundings in order to discover some compensating means to overcome them, and maintain us and our animals, upon which we are more and more becoming dependent, in as good a state of health as is possible.

Beyond free or forcible exercise in the open air or sunlight, good nutritious food and clean dry surroundings, massage should be systematically applied with the object of correcting deformity before the epiphyseal cartilages have been obliterated, and the epiphyses firmly united to the shafts of the long bones. If the deformity has not been overcome by the sixth month, it will be difficult to remove it. In the absence of freshly crushed green bone, cod liver oil, marrow fat, yolk of egg, fresh cream or butter, etc., may be given. Of course, raw meat and fat should be given to dogs at all times; it is their natural food.

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DISCUSSION.

Professor WOOLDRIDGE: The subject brought before us by Mr. Gray is one in which we have all had a considerable amount of practical experience, in spite of which we are all grovelling in the depths to find the real solution to the problem as to what is the real cause of the trouble. Mr. Gray has covered the ground very well, and his tracks are covered as carefully as one would expect Mr. Gray to cover them. (Laughter.) That is a mode of presentation which leaves few loopholes for the shafts of criticism.

It is not long ago, however, that Mr. Gray told us that he could produce rickets, roughly speaking, in about five minutes, solely by limiting exercise. Apparently, since that time he has discarded that view and has come to the conclusion, with which I agree absolutely, that rickets is due to a combination of circumstances, and that no one particular factor can be called the cause of rickets. The combination put forward by him comprised lack of exercise, of sunlight, and of those foods which contain a large proportion of oils. I think we might go further and say: a good balance of the materials composing the food is very important, with the inclusion amongst them of those very elusive bodies, vitamines.

A point which Mr. Gray did not emphasise sufficiently, although he made reference to the daylight, is the importance of the active rays of light, the ultra-violet rays, which are held back by ordinary glass. Many people make the mistake of thinking that they are giving their animals adequate light when they are in a room with plenty of glass, but that is not the case if the light has passed through glass. Of course you get rickets in lambs that are frolicking in the open, and which, naturally, get plenty of exercise, and are having herbaceous foods which contain these fat-soluble vitamines. One has seen rickets in litters of puppies, which have been in absolutely perfect conditions; some of the litter are ricketty, and some are not. By observing these points, then, you can reduce the incidence of rickets, but you cannot, apparently, obviate it absolutely. Mr. Gray said that one often gets a very painful condition of the bones on manipulation in rickets. That has not been my experience, except where you have complications, such as chondritis. The reference to paraplegia is interesting: it is much more common in monkeys than in other animals. In *maladie du reniflement* you get osseous corchexia of the nasal bones, which become so enormously enlarged as to push aside the turbinated bones, and almost to occlude or obstruct the nasal chambers. That, as Moussu pointed out, is infective, but I do not think it can be regarded as the same disease as rickets. One occasionally meets with it in dogs, when the lower jaw is the most frequently affected, with the result that you occasionally find the lower jaw dropped, as in dumb rabies—a point to be remembered in regions where rabies is common. The treatment outlined by Mr. Gray for rickets is such as I have carried out with a large measure of success for quite a long time. I think syrup of phosphates is, however, an important addition. I am not at all sure that more investigation should not be conducted with that very important ingredient of food, the phosphate, and particularly the phosphate of calcium.

I thank Mr. Gray for bringing the matter forward, and for the enormous amount of time he has spent, on our behalf, in preparing the paper. (Applause.)

Dr. M. J. ROWLANDS: First of all, we must each one endorse Professor Wooldridge's expression of thanks to Mr. Gray for the great amount of work he must have put into this paper. I have had a great deal of experience of rickets, as I deal with an animal in which rickets is extremely common—I think more common than in any other domesticated animal—the pig. There are several points in the paper in which I feel sure Mr. Gray will allow that there is room for a variance of opinion. For example, there is a statement that rickets is more common in the middle white pig than in any other. I think the black pig to be the commonest victim of rickets, and that has also been found to be the case in black children. All the pigs are bred and fed on similar lines and left out of doors, yet I find tremendous difficulty with my large blacks. There is no doubt that the question of vitamines is affected largely by the sun's rays, and colour would therefore come greatly into the matter.

As regards rickets coming on after weaning, of course rickets is a disease of rapidly-growing animals. I have been showing at Smithfield, and the great thing is to get a rapidly-growing animal and to get him healthy—and that, too, is the difficulty. As Mellanby says, there is no reason why we should have rickets to-day amongst children and farm stock. I have eliminated rickets entirely on my farm. I do not think, turning out as I do 1,500 pigs a year, I have had a single ricketty pig in the last few years. Why? I am one who is convinced by experience that the A vitamin (whether or not it contains two factors—the anti-scorbutic and the growth-producing) is a vital agent in the process.

I think we are going to get more rickets amongst animals, for conditions of feeding are changing: cake feeding has increased enormously, and I am

convinced that no vegetable oil contains any vitamins whatever.

I find scurvy is often mistaken for rickets, and that is the point—are all these cases diagnosed as rickets really such? Mellanby showed that exercise played no part in rickets whatsoever. I have enclosed a pig in the dark, allowed it very little sunlight, fed it on palm kernel cake and cod liver oil, and no rickets developed.

I am convinced to-day from practical experience that the question of rickets develops itself into one of vitamin deficiency.

Professor Wooldridge has hit the most important point. It is not a question of whether you have sufficient A. of B., it is the balancing of the diet—the balancing of carbrohydrate versus protein is the most important as regards the amount of vitamin you get. Many experiments which have been carried out in connection with the effect of these foods on animals have been conducted on the mistaken assumption that the foods contained no A vitamin, whereas in fact they do. Oatmeal is a case in point. A great thing which has not been mentioned is the power of storage of A vitamin possessed by the fat of farm stock.

If we go on feeding our animals on the modern vitamin-deficient oil cakes, you veterinary surgeons are going to get a glorious time, for the simple reason that we are nowadays almost doing away with our grass, and forcing a tremendous milk supply on cake.

There is A vitamin in milk, and that is why rickets often does not come on until a pup is weaned. I do not believe that if you give the A vitamin and no phosphates you would not get rickets, because unless you have the phosphates you are eliminating the calcium phosphate.

In regard to cod liver oil I wish to warn you against using that of British Pharmacopœia, which has to be frozen, in the process of which the stearates are left behind—you should, therefore, use the crude cod liver oil, as in the refined oil the A vitamin is left behind.

Do not look upon rickets as a mysterious disease, concluded Dr. Rowlands. My opinion, as a practical farmer on a pretty large scale, is that rickets is a disease which should not be present on a farm or amongst the stock. (Applause.)

Captain KIRK: There is one question that has not been mentioned at all in connection with rickets, and that is the influence which the ductless glands have on growth. Extirpation of the pituitary is known to produce alopecia, dental caries and rickets. If that is so, might we not cure rickets by giving pituitary extract? The medical practitioners, I believe, have found marked benefit from giving extract of thymus in rickets. Parathyroid is another thing that has been used, and we must all admit that the various ductless glands are intimately connected with growth, bone and tooth formation.

I think we shall have to find the answer in the individual, because, after all, rickets is a disease that only attacks a very small percentage of animals and human beings, and it is in that small percentage that we may find that there are deficiencies in the ductless glands. All books that I have been able to read on the subject admit that they know nothing about the causes. The bones may be deficient in lime, although there is any amount of lime in the body, as evidenced by the amount which is excreted. Is it not a question of inability to assimilate the lime? Is that inability connected with the ductless glands?

It has not been my experience that 90 per cent. of distempered dogs have rickets.

Professor MACQUEEN: I should like with your permission, sir, to propose that we adjourn this discussion to the next meeting, as I think it is a paper of such importance that we ought to see it in type. I am strongly in favour of the remarks made by Captain Kirk.

Colonel YOUNG seconded, and expressed the hope that Dr. Rowlands would be present at the adjourned meeting.

Dr. ROWLANDS: I might say that I have fed all the ductless glands I could find to pigs with rickets, without any result.

Captain KIRK: Feeding these things is no use—it is only the thyroid that, fed by the mouth, has an effect.

MILK RECORDS.

"The 3,000-gallon record cow, from all appearances, will shortly be classed as a back number," says *The Farmers' Gazette*. "She was a prodigy when she was first introduced to the dairying world, and a prodigy she remains, and deserves to be, yet. The greatness of her feat has, however, been excelled, and to Japan, of all countries in the world, belongs the credit of possessing two cows which far outstrip all their rivals in milk yield. The two Friesian cows in question can claim a milk production within 365 days of 41,112 lbs. and 37,923 lbs. respecti-ely, while their butter-fat total reached 1,793 lbs. for the former and 1,827 lbs for the latter. It is nothing less than wonderful that an animal not scaling more, probably, than 9 to 10 cwts. should produce almost four times her own weight in milk within a year, and somewhat more than her own weight in butter. The feeding records show that the cows were given a varied and magnanimous diet. The ration included eighteen ingredients in all, comprising bran, barley, sweet potato, rice, soy beans, and other vegetable products native to Japan. Out of the eighteen kinds of food, no less than five, it is stated, were fed in the form of soup or gruel. To judge from the quantity of food consumed daily, the cows had no lack of appetite, and their digestive abilities must have been the soundest, or else they could not be worked at high constant pressure for so long without breaking down under the strain. The records claimed by the Japanese-owned cows are so much in advance of anything yet attained in other countries that there is some reason to question them, as well as to express a doubt as to whether any bounds can be set to the milking capacity of a cow when supplied with all the food she can consume. The announcement of these new records was first made at the World's Dairy Congress held recently in the United States. The place was a fitting one, and, no doubt, the figures will come as a jolt to the dairy high-brows of America, who, if they want, as their usual nature is, to go one better, will need to sit up to it."

The Veterinary Record.

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POULTRY DISEASES AND MARKETS.

The continued increase in the poultry industry calls for more attention from the veterinary surgeon. Besides affording a ready lucrative means of daily practice, the study and treatment of the diseases of poultry becomes daily of greater importance from a scientific and an economic point of view. In these days, when large poultry farms exist in most districts, and when many hundreds of birds are kept at one farm, the prevalence of contagious disease becomes more important. On many of these premises, men are endeavouring with insufficient land to keep large numbers of birds both for egg production and also for the table. In such places an outbreak of contagious disease may destroy the whole flock, and frequently does so. On the larger farms where more capital is available, the birds are kept under better conditions, and that curse of the small producer—overstocking the land—is not so often seen, but even here outbreaks of disease are only too frequent. There is no doubt that contagious disease is disseminated from markets and shows to a very great extent, and owing to there being no control, no supervision, no notification of disease, and no inspection, these contagious diseases may be spread without let or hindrance all over the countryside. Legislation on this matter is long overdue, and poultry farmers, agriculturalists and veterinary surgeons should unite to urge the introduction of a statute under which such diseases as fowl cholera, plague, fowl pox, and other contagious diseases might be scheduled. The powers of the Ministry of Agriculture are at present governed by the Poultry Act, 1911, and if this Act could not be suitably amended, it ought at least to be possible to amend the C.D.A. Acts, so as to include the more devastating of the diseases of poultry.

The veterinary inspection of markets where poultry are exposed for sale, though very necessary, would not be sufficient in itself, for disease is spread to a great extent from the premises of small private dealers and from the importation of infected hatching eggs from abroad. The latter trade should be entirely stopped for the protection of our own birds, while the small dealer should be placed under rigorous supervision. Until steps are taken in this direction our markets will remain a disgrace to a nation upholding the principles of hygiene and sanitation, and boasting of its common sense and business capacity.

Review.

Poultry Diseases, and how to prevent or to cure them. By Henry Gray, M.R.C.V.S. (London: *The Bazaar Exchange and Mart* Office, 54 Drury Lane, W.C.2. Price 2s.).

Here is an excellent little handbook, which will be of great service to all those who are interested in poultry farming. We have seen nothing of equal value published in this country, though some years ago Dr. Salmon published a useful handbook in America. The diseases of poultry are dealt with in a very clear manner, though perhaps the scientific terms which occur with very great frequency may be a hindrance to the lay reader, in spite of the fact that an excellent glossary appears at the end of the book. There is also an excellent list of suitable drugs, with their doses and mode of administration. This little work should be found in the hands of every veterinary surgeon, for the information contained in it is not only up to date, but condensed and so arranged that it is readily available for reference by busy men. One may learn from this book more rapidly than by slow search through the standard text books. The price, 2s., places it within easy reach of all, but we should like to see something better than a very thin paper cover, even at a little greater expense.

Except where foot-and-mouth disease is prevalent, both cattle and sheep have done well during the month in spite of the unfavourable weather. Breeding ewes on the whole are in good condition, though occasionally they have suffered from the protracted wet. Sheep on turnips have required much attention and have been adversely affected by the weather conditions. Lambing among Dorset Horn flocks is practically completed, and the fall of lambs is well up to average. The lambs are doing well, and there has been little mortality amongst ewes. Lambing has commenced in a few other early flocks in the South.—*Official Report.*

A bullock which was being driven to the local market entered the dining-room of the King's Head Hotel, Holywell. It walked round the room, surveyed itself in a looking-glass, and after inspecting one or two chairs and the fire, had a long look out of the window. It then walked out into the street without doing any damage.—*Manchester Guardian.*

Clinical Report.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases.

Rupture of the Diaphragm in a Dog.*

By F. CHAMBERS, F.R.C.V.S., Wolverhampton.

On October 29th, a four-years old springer spaniel was run into by a passing motor car. The car did not go over him, but knocked him out of the road with the near fore wheel. I saw the dog shortly after his accident, and there did not appear to be anything seriously wrong with him, except that he micturated at frequent intervals.

On November 11th, an urgent request was sent me to go and see the spaniel, as he was very distressed, and breathing with great difficulty. When I saw him I found that his respirations were extremely rapid, and that the breathing was of an abdominal variety. At each expiration the sleek area between the last rib and the angle of the hip would be ballooned out. The temperature was 104°F., and the pulse 78. There was a considerable dullness over the lower portion of the chest. Loss of appetite was complete. On the third day the dog commenced to eat; the temperature became normal, but the difficult respirations continued. As no improvement was taking place, I suspected a ruptured diaphragm, and had the dog radiographed on December 6th, and the screen verified the diagnosis. A loop of the bowel could be seen on the left side of the chest, whilst there was a large dark area on the anterior side of the diaphragm. (Skiagraph exhibited.) The dog continued to be bright and fed well. With the owner's consent an exploratory laporatomy was made on December 9th. It was pointed out that when the abdomen was opened the air would rush in and the lungs would collapse. This is exactly what happened, but the respirations continued for over two minutes after the peritoneum was punctured. There was a great flow of ascitic fluid. The diaphragm was torn from top to bottom, and the torn edges had healed. In the chest was a loop of small bowel and the greater portion of the liver. The portion of the liver that was in the chest was much congested and enlarged. The base of both lungs was congested. The extraordinary thing is that the dog lived such a long time after the diaphragm ruptured. It must have become slightly ruptured at the time of the accident, and the rupture extended on November 11th. The intestines and liver that were incarcerated were not adherent to the chest walls.

At Bolton Quarter Sessions, R. H. Gill, a well-known trader, appealed against his conviction and sentence by the borough magistrates of three months' imprisonment for having a tubercular cow's tongue on his premises. The sentence was reduced to a fine of £20.

*Presented to the Midland Counties Division at Leicester on December 7th, 1923.

Divisional Reports.

Midland Counties Division.

One of the most successful gatherings in connection with the Midland Counties Division was held at the Grand Hotel, Leicester, on Friday afternoon, 7th December. Both Council and General meetings were held. At the former, the President, Mr. A. B. Forsyth, presided, members of the Council present being W. H. Brooke (Birmingham), J. Martin, senior (Wellington), J. Cormach (Coventry), and the Secretary, Mr. H. J. Dawes (West Bromwich).

There was little business to transact, it being decided that at the annual meeting of the Association the only other business, apart from the general business, be interesting cases brought before the meeting by members.

Mr. BROOKE reported that he had received resignations from Mr. Bainbridge and from Mr. Heath.

The general meeting was then held, being presided over by the President, Mr. A. B. Forsyth, while there were also present Messrs. H. J. Dawes (West Bromwich), W. Trigger (Newcastle, Staffs), Frank Chambers (Wolverhampton), H. W. Dawes (West Bromwich), J. Cormack (Coventry), J. Burchnall (Barrow-on-Soar), L. C. Tipper (Birmingham), J. W. Conchie (Kidderminster), W. E. Ison (Atherstone), H. S. Reynolds (Daventry), P. M. Evershed (Nottingham), J. Robertson (Stourbridge), H. R. Cockburn (Eastwood), R. J. Lake (Ashby-de-la-Zouch), W. White (Birmingham), G. Howie (Birmingham), H. Thornton (Leicester), H. Steele Bodger (Tamworth), W. F. Aston (Derby), C. Haywood (Leicester), T. Hobson (Leicester), W. L. Gascoigne, (Lutterworth). *Visitors*: Harold Stainton (London), G. H. Livesey (London), and R. Watts (Nuneaton). Apologies for non-attendance were received from Professor Hobday (London), Sir Gilbert Barling, Messrs. E. Beaumont, G. A. Banham, R. C. Trigger, L. C. Maguire, H. L. Pemberton, W. J. Dale, R. P. Palmer, T. J. Brain, R. P. Holmes, C. J. Clifford, J. R. Carless, A. W. Findlay, Trevor Spencer, L. W. Heelis, H. B. Hiles, W. W. Grasby, Edward Ringer, W. Tart, F. V. Steward, T. Tudor Hughes, C. J. Peach, M. Tailby, S. M. Woodward, Brennan de Vine, R. Hughes, E. R. Murray, A. A. Forsyth, T. Martin, F. L. Gooch and others.

The circular convening the meeting was read, and the minutes of the last meeting were confirmed and signed.

Nomination of new member.—Mr. W. E. Ison nominated for membership Mr. R. Watts, of Nuneaton.

Election of new members.—The following gentlemen's nominations being endorsed, Messrs. T. Wilson (Nantwich), A. Renfrew, junior (Broadway), G. Renfrew (Broadway), and G. V. Tyreman (Ludlow), were elected members of the Association.

The SECRETARY read a letter from the Royal Sanitary Institute, notifying the Association of a conference on 14th December, at which Alderman

Phené Neal would present a paper on "Tuberculosis cattle and the desirability of allowing the introduction of breeding heifers from Canada if certified free from tuberculosis," and inviting the Association to send a representative to the conference.

In reply to Mr. TIPPER, the Secretary stated that the idea was to send a representative to take part in the discussion and to lay the views of the Association before the gathering.

Mr. TIPPER urged the importance of taking part in the conference. He remarked that the result of the election made it impossible for anyone to know what would happen in the future, but it was important that this matter should be followed closely.

Mr. MARTIN did not think the Association should go to the expense of attending the conference.

Mr. LIVESEY, invited to give his opinion, thought the Association would do well if they discussed the matter, for it had an important bearing upon the members of their profession. He thought that representation at the conference might do good.

After further discussion, it was decided, on the motion of Mr. REYNOLDS, seconded by Mr. DAWES, junior, that the Association should not send a representative to the conference.

Mr. TIPPER next referred to a circular letter from the National Poultry Institute and Research Stations, asking for a donation to the funds, and explained that the objects of these research stations were to consider scientifically poultry raising and breeding in all its phases. The sum of £65,000 was required to carry on the work, of which £16,500 had been subscribed from "outside" sources. The Chamber of Agriculture was interested in the movement, and he thought that the Veterinary Profession should help.

After a brief discussion it was decided, on the motion of Mr. REYNOLDS, seconded by Mr. ASTON, that the Association should not subscribe to the fund.

The resignations of Mr. Bainbridge and Mr. Heath were accepted with regret.

The SECRETARY gave a brief report of the Dick College Centenary anniversary gathering recently held, and said how delighted he had been with all he had heard and seen. He had been a member of the Veterinary Profession for nearly forty years, and never remembered having seen such a profoundly interesting gathering as this had been. On the first day they had a reception by Doctor Bradley, who took them round the Institution, which must be one of the finest of its kind in the world. Later, an address by Professor Theobald Smith impressed them all, and the next day there was a procession of all the dignitaries and officials. It was an impressive occasion. Sir John M'Fadyean afterwards delivered an oration, which was a great treat, and would long live in the memory of those who had the pleasure of listening to it. He thought if a full report of the proceedings could be made public it would do the profession a great deal of good in this country.

Mr. LIVESEY confirmed what Mr. Dawes had said, but while he endorsed the idea of propaganda work, he was afraid that the speeches would be too long and make too bulky a circular to print at length.

A recent departure was seen in the paper laid before the meeting by Mr. Harold Stainton, F.R.C.V.S., the subject being "Skin diseases of the dog." Mr. Stainton had written a paper of several thousand words, and it had been printed and circularised before the meeting was held, an idea greatly appreciated.

[Mr. Stainton's paper and the ensuing discussion receive separate publication.—ED.]

The SECRETARY moved a vote of thanks to Mr. Stainton for his valuable paper and to Mr. Livesey for his introduction to the discussion. He remarked that a printed paper was a new departure for the Association, but it seemed to him that they would all find it a highly valuable book of reference in their practice. Mr. Stainton was engaged in a very large dog practice, so that they had had that day the experiences of a gentleman who knew his subject. He was grateful for the discussion, for it showed that there was a healthy interest in the work the Association was doing. In regard to Mr. Livesey, he was now in an important office with the National Association, and had an enormous amount of work to perform, so that they were specially grateful to him for giving up so much of his time in preparing such a thoughtful speech as he had made that day.

Mr. BROOKE briefly seconded the vote of thanks.

In reply to vote of thanks, Mr. STAINTON said that he could only express his appreciation. It had been a great pleasure to take part in such a live and enthusiastic meeting.

Mr. LIVESEY said that Mr. Stainton had presented them with a most valuable paper, and it deserved the very best attention and study of every member of the Veterinary Profession.

An interesting case, which appears elsewhere in this issue, was then presented by Major F. Chambers, of Wolverhampton, also the following *post-mortem* specimens.

Mr. J. CORMACK presented the following:

POST-MORTEM SPECIMENS.

Kidney of Cow.—This kidney is enormously enlarged, and consists chiefly of a mass of abscesses. Both kidneys were alike, and were found in an aged cross-bred longhorn

The cow had been turned out in a meadow with her calf for several months, and appeared to be in good health, until one day the shepherd noticed a discharge of a few pieces of a ropy, mucoid, yellowish material, which he took to be small pieces of placenta. In the course of the next few days I saw the cow, and found her passing, in addition to the occasional mucoid material, blood-coloured urine. Treatment for chronic inflammation of the kidneys was applied, but the cow continued to lose condition and began to refuse her food. She was slaughtered.

Liver of Pig.—This liver was found while a *post-mortem* was being made on a young unthrifty pig. The hepatic ducts are much thickened from the

presence of ascaridæ, which, as you see, are blocking these ducts. The appearance resembles that found in sheep's fluky liver. I have not previously met with a case of this type.

A hearty vote of thanks was accorded to Mr. Chambers, and also to Mr. Cormack.

The members afterwards had tea together.

H. J. DAWES, *Secretary.*

Central Division.

VOTE OF CONFIDENCE IN THE MINISTRY OF AGRICULTURE.

The passing, with practical unanimity, of a resolution expressing the "utmost confidence" in the judgment of the veterinary officials of the Ministry of Agriculture in their handling of the present visitation of foot-and-mouth disease, was an important feature of a meeting of this division, which was held at the R.C.V.S., 10 Red Lion Square, on Thursday, January 3rd, 1924.

Major G. Rees-Mogg presided, and there were also present Messrs. H. R. Allen, J. Bosworth, W. Brown, Professor J. B. Buxton, Messrs. R. C. Cornell, A. Cornish-Bowden, Miss A. Cust, W. R. Davis, G. W. Dunkin, F. C. Gillard, H. Gray, Major F. T. G. Hobday, Messrs. H. D. Jones, H. C. P. King, W. S. King, H. Kirk, G. H. Livesey, C. Macara-Finnie, Professor J. MacQueen, Messrs. G. D. Martin, J. W. McIntosh, Major-General Sir J. Moore, Mr. W. Perryman, Colonel W. Rainey, Messrs. J. Rowe, P. J. Simpson, P. W. Dayer-Smith, E. L. Stroud, E. C. Winter, Professor G. H. Wooldridge, Mr. T. L. Wright, and J. F. Macdonald (Hon. Secretary).

Visitors:—Messrs. P. J. Ede, R. E. Glover, Prof. E. G. Langford, Mr. V. V. Morgan, Dr. M. J. Rowlands (of University College Hospital), and Mr. F. Ware.

The *minutes* of the previous meeting, having been published in the *Record*, were confirmed and signed.

CORRESPONDENCE.—The HON. SECRETARY read letters of apology for absence from Major-General Sir L. J. Blenkinsop, Mr. J. W. Pritchard, Colonel A. Smith, Mr. J. Willett, Capt. A. E. Willett, Lieut.-Colonel A. J. Williams,

A letter was read from Mr. P. C. Woolstan submitting his resignation on account of distance of residence from London. It was proposed by Professor WOOLDRIDGE, seconded by Mr. E. L. STROUD, and agreed that the resignation be accepted with regret.

The HON. SECRETARY read a letter which had been sent him, as the Secretary of the Division, from Mr. G. H. Livesey, the Hon. Secretary of the parent Association, urging the claims of the latter body upon his enthusiastic support and, through him, that of the Division, for the year 1924.

Nomination.—Mr. F. Ware was nominated for fellowship.

Elections.—The following were elected Fellows: Capt. T. Dalling, M.R.C.V.S., Wellcome Laboratories, Langley Court, Beckenham, Kent: Proposer, Major F. G. Hobday, Seconder, Hon. Secretary; Capt. Frank Hogg, M.R.C.V.S., The Barracks, Colchester: Proposer, Major F. G. Hobday, Seconder, Hon. Secretary; Mr. J. Heath, M.R.C.V.S., 295 The Arches, Cambridge Heath, E.2: Proposer, Major F. G. Hobday, Seconder, Hon. Secretary; Mr. R. E. Glover, M.R.C.V.S., National Institute of Medical Research, Hampstead, N.W.3: Proposer, Major F. G. Hobday, Seconder, Mr. G. H. Livesey; Mr. V. V. Morgan, M.R.C.V.S., 6 Bishop's Court, East Finchley, N.2: Proposer, Major F. G. Hobday, Seconder, Hon. Secretary; Mr. Neville S. King, M.R.C.V.S., Whyteleafe, Leatherhead, Surrey: Proposer, Mr. Herbert King, Seconder, Mr. J. W. McIntosh; Prof. E. G. Langford, M.R.C.V.S., Royal Veterinary College, Camden Town, N.W.1: Proposer, Prof. G. H. Wooldridge, Seconder, Mr. J. W. McIntosh.

R.S.I. DELEGATE.—Colonel T. Dunlop Young was appointed to represent the Division at the Royal Sanitary Institute Congress, to be held in Liverpool, from July 16th to 19th, 1924.

MORBID SPECIMENS.

Capt. H. KIRK: I have brought here the carcases of two puppies, which I received only half an hour ago by post, for *post-mortem* examination, and I received with them the following letters:

"I am sending under separate cover the body of an Irish terrier puppy for *post-mortem* examination. He was born on the 18th October, 1923, and was one of four pups of the litter. One bitch had to be destroyed, owing to enlarged throat glands, and this pup, on Wednesday evening, gasped three times and seemed to become paralysed in the hindquarters, and pitched forward—dead. He had two lumps in his throat, and food, when taken in the smallest quantities, would distend his stomach very much. Although he had had no food from Tuesday evening, immediately after death the stomach became inflated to an extraordinary extent. All four puppies were affected by the enlarged throat glands, and I should be glad to know the cause of this, and if there is any cure or method of prevention. Also, the puppy's tongue after death became quite white."

"Would you please inform me the cause of death of the enclosed puppy?

"History.—Sealyham bitch whelped five dogs and one bitch on evening of Wednesday, 26th inst., when all appeared well. Last Saturday the first dog died, and on Sunday two dogs and one bitch died; to-day the enclosed. The remaining dog appears to be a healthy, strong pup. The bitch was five years old the end of this month; the sire twelve months old. Bitch fed on milk (pure) since whelping."

The Irish Terrier puppy is undoubtedly the subject of goitre, and he has got a couple of tremendously enlarged glands in his throat, and there are enlarged thyroid glands, while his heart is twice as big as it should be in a puppy of that age. I am not sure

whether the puppy died from suffocation or cardiac failure.

From what I can see, upon a cursory glance, the other is a case of umbilical infection. If anyone has any views on the subject, I should be glad to hear them in reference to navel infection.

The PRESIDENT: In reference to navel infection, I had a Freisian heifer, and after several months she developed an enormous abscess in the glands of the neck. I took a sample of the pus and sent it to Sir John M'Fadyean, who examined it, and said he could not find any tubercle bacilli in it. I injected her with tuberculin in the eye and neck, and it gave a negative reaction. It has got enormous glands in the hind leg, in the shoulder, and in the axilla. The animal looks in perfect health, but it has not grown at all. I have had a vaccine made, and it has had six doses, but it is getting an enormous abscess now just above the back. It is over a year old. I should be obliged if someone could tell me what he thinks it was.

Professor WOOLDRIDGE: I should like to know from what organism the vaccine was made.

The PRESIDENT: I was in France at the time, but I imagine it would be a streptococcic vaccine.

In reply to Mr. E. C. WINTER, the PRESIDENT said that the calf was about five months old when the condition was first noticed.

Mr. HENRY GRAY: As there is suppuration, I do not think it is a case of the Hodgkin's disease, though the symmetrical enlargement of the glands is very suggestive of it.

The PRESIDENT, answering Mr. MARTIN, said that there was no perceptible enlargement of the thyroid.

Capt. KIRK: I should like to ask the meeting whether they consider the death of the puppy was goitre, was due to cardiac failure, or asphyxiation, and whether they think, as two of the other puppies were infected with the same thing, it was a congenital or a later infection.

Mr. HENRY GRAY: I have seen that condition in puppies in every breed before they have opened their eyes. They have been found dead, and they died from suffocation.

Professor WOOLDRIDGE characterised the two specimens as very interesting ones, and continued: Enlarged thyroids in puppies are not uncommon, and often, as Mr. Gray has said, the first thing observed is the dead puppy. I had a similar case in point in one of the lion cubs at the Zoo. I have examined the other cubs to-day, and two of the remaining three have also got enlarged thyroids, and are weak. I do not think the pressure is sufficient to cause asphyxiation, but that death in the Irish terrier puppy is due to cardiac failure. In the case of the Sealyham puppy, I do not think there is any doubt that peritonitis is the cause of death, and, from the condition of the lesions, that it was an umbilical infection due to dirty kennels or, possibly, even the dirty teeth of the mother.

With regard to your own case, Mr. President, I thought at first it was Hodgkin's disease. I have seen cases in dogs in which the lymphatic glands have broken down in that disease, where there has been no indication of external infection. An age of five months seems rather young for that condition to have started, however. With regard to treatment, I should administer Donovan's solution.

In reply to Mr. STROUD, Prof. Wooldridge said that, as he did not see the *post-mortem*, he could not say whether or no the lion cub had an enlarged heart.

Major HOBDAY: My own opinion would be that the death was due to cardiac failure, for the glands have been enlarged for some days beforehand. They are so freely movable, moreover, that I do not think the death is due to suffocation. I think common opinion amongst practitioners is that it is a congenital defect.

Mr. STROUD informed the meeting that he had a white Highland terrier, 16 years old, which had tremendously enlarged thyroids.

Colonel YOUNG: We have the pleasure of having with us to-night Dr. M. J. Rowlands, an eminent pathologist in the medical world, and I feel sure it would be of interest to all of us to hear him on the subject. (Applause.)

Dr. M. J. ROWLANDS: While I was at the Great Ormond Street Hospital we found that enlarged thyroids were quite common, and a good deal of work was done upon the subject. Goitre is not very frequently met with in children in England, however, but in Switzerland it is endemic.

Dr. ROWLAND'S HUMAN FOOT-AND-MOUTH DISEASE CONSULTATION.

If I may be allowed to diverge a moment from the subject under discussion, owing to what I believe to be importance of that of my digression, I should like to inform you that this afternoon I was called in consultation and I have seen what I consider to be foot-and-mouth disease in the human being. The doctor who called me in consultation is a very able practitioner. The daughter, 21 years of age, first of all suffered from blebs on her lips, and her temperature rose to 102°F. The affection spread to the roof of her mouth and her tongue. The doctor in charge, who saw foot-and-mouth disease in Ireland in cattle, said that he had never seen anything of this kind previously in the human being. After three days, the father suffered from an exactly similar condition. Three days later, again, another daughter started with the same thing, and four days ago the youngest daughter followed suit. The whole family, with the exception of the mother, were affected with this condition.

The doctor 'phoned me yesterday and asked me if I would see the cases for him. The eldest daughter had blisters on the right thumb right under the nail. The second daughter also had three blisters on the right of the nail of the first finger on same hand. All ran to temperatures of 102°F. The blebs disappeared in ten days. Every effort was made to trace the source of the milk consumed by the family, but it all came from very large dairies.

Whilst I was in Newcastle the other day, a practitioner asked me if I had seen any eruptive case where the nails were affected as well as the mouth. This case impressed me enormously. I know of no other pathological condition that could have occurred with symptoms so similar, and with fingers affected with blebs. So much was I impressed that, though I had intended visiting my farm this afternoon, I avoided going near the 700 animals there.

Returning to the specimen discussion, Dr. Rowlands said: As a rule, in human beings, one gets very little strides with enormous thyroids, but commonly the condition of the heart is not conducive to long life. I quite agree with Professors Hobday and Wooldridge that death was due to cardiac failure.

I feel that, as was said at our meeting at the Royal Society of Medicine, that there is an enormous amount in common between the two professions, especially when one bears in mind the fact that, of course, we do all our research work on animals. I am sure Professor Hobday must be delighted to see the success of the new comparative section of the Royal Society of Medicine, for which he has worked so assiduously. (Applause.)

Mr. E. C. WINTER: Forty-five or six years ago, in Ireland, there was an acute outbreak of foot-and-mouth disease, and I remember that several hands on the farm contracted a mild form of the disease, and were medically attended for it. As far as I remember, all symptoms vanished in about a week, the local treatment being alum water only There is a case on record where a veterinary surgeon contracted the disease in Ireland just before the war. He was a Board of Agriculture man.

Dr. ROWLANDS: I .have been given the name of Dr. McGuinness, of the College of Science, Dublin.

Major HOBDAY: A recent instance was that of Mr. Vincent Boyle.

Professor WOOLDRIDGE: The veterinary inspector who contracted the disease in Ireland was Mr. George Bell, and both his hands and his feet were involved, as well as his mouth. The hands and feet were affected round the base of the nails and in the interdigital spaces. He contracted it by handling cases at the Port of Dublin.

Mr. DAVIS: I have seen a case of foot-and-mouth disease in a man. He had no lesions in the mouth, but it was limited to the nail of the thumb, the hand, and the arm. The lesion was something like a whitlow—one penetrated under his nail, which came off, and the glands at the elbow were very much swollen. He was a cowman, and the incident occurred a great number of years ago.

I have seen an outbreak of goitre in lambs, when a great number of them died, in Scotland.

Colonel YOUNG: With regard to the case of Mr. Boyle, that was a very serious one, contracted from herding affected animals—not from the milk supply. He nearly lost his life. There must be some immunity to foot-and-mouth disease not abridged in human beings, as nearly every one here must have been exposed to the danger of infection. We have read about human cases of the disease, especially that of Mr. Boyle, and I will undertake to send Dr. Rowlands a copy of the particulars.

Professor BUXTON: Cases of foot-and-mouth disease in the human subject are probably due to inoculation in this country. On the continent there have been outbreaks in villages, and there it has affected them on the mouth and occasionally on the hands.

Major HOBDAY moved the following resolution: "That this meeting of the Central Veterinary Medical Society expresses its utmost confidence in the judgment of the authoritative veterinary officials of the Ministry of Agriculture in the difficult problem with which they are confronted, owing to the extensive outbreak of foot-and-mouth disease." He suggested that the resolution should be forwarded to the daily agricultural and medical press, the Ministry of Agriculture, the Ministry of Health, the Farmers' Union, the Central Chamber of Agriculture, and the Cheshire Farmers' Society. Major Hobday thought that, if that Society were to pass such a resolution it would help the authorities to stand by their guns if they desired to do so, and if not, it would show them that the profession had every confidence in their judgment in whatever measures they regarded it as necessary to take to deal with the situation. "The general public," concluded the wording of the resolution, "have not the slightest idea that the question is entirely an economic one, and not a question as to whether the disease can be cured or not."

Mr. HENRY GRAY: I rise to second the resolution, because the experience of the Veterinary Profession in the last thirty years has shown that the slaughter policy is a right one. In 1872, when there was a very large outbreak, Professor Gamgee estimated that we lost twenty millions by the disease, and an average over many years of ten millions. I estimate that if the disease is allowed to extend, it will cost us forty millions. Some animals that have developed the disease have recovered and have had it again a few weeks afterwards. We have no proper means of isolating cattle in the majority of instances on our farms, and the people are ignorant. I may say that in 1865 we had cattle plague in this country, and Professor Gamgee, in 1857, had forewarned the country against not taking precautions as to the cattle coming from Russia, but no notice was taken. In 1865 he recommended the poleaxe system, but instead of adopting it the Ministry, backed by the press, appointed a commission to examine and report, which they did until we had very few cattle left. Then, and only then, did they adopt the poleaxe system. Since that experience they had followed the advice of the Veterinary Profession, and he hoped the Ministry would not be swayed at this juncture by public sentiment and hysteria.

Mr. LIVESEY: Might I support what Major Hobday has said, and may I draw your attention to the fact that a good deal of the hostility to the policy of the Ministry of Agriculture is arising from members of our own profession. Under these circumstances

the views of those professional men who bind themselves together in Societies must be of use. Let me, as an instance of the way in which the views of the profession as a whole are misrepresented, quote from a recent issue of the *Chester Chronicle*: "It should be stopped. It must be stopped. Every opinion we print from veterinary surgeons is in favour of treatment and isolation." I think the veterinary profession should, in these circumstances, hold together in support of the Ministry. I am very glad that Major Hobday has brought this motion forward.

Mr. DAVIS: If a man does not feel he can support the Ministry, there is no reason why he should do so. The whole of the reasoning is not on one side. In 1884 there was an outbreak of foot-and-mouth disease in the Isle of Man. The ports were all closed, and isolation was carried out. There was no slaughter or compensation, and in three or four months the disease died out, and there has not been an outbreak there again, so far as I know. I think we should form an opinion and give expression to it on the personal experience arrived at.

Professor WOOLDRIDGE: If it were possible to isolate areas in this country in the same way in which the Isle of Man is isolated—in the middle of the Irish Channel, I would be the first to support the suggestion of Mr. Davis. But in this country it is not possible, and, owing to the rapid spread of the disease, I think the only sound procedure is to stamp out the disease. Let us not be stampeded ourselves in regard to the action taken by the Ministry.

Major HOBDAY: I did not mention the word slaughter—I think that we should express our utmost confidence in the Ministry in their dealing with a difficult problem.

Professor MACQUEEN: It does not appear to me to be absolutely necessary for this Society as a body to commit itself to any sort of support of Government policy. So far as I can see, the policy of the Government will be pursued, and I fail to see the effect of any resolution passed by this Society.

I think we ought to consider this question with a certain degree of calmness. In the days to which Mr. Gray refers there was no Board of Agriculture; foot-and-mouth disease is benign in this country, but cattle plague is a very fatal one. It seems to me, therefore, that there is a good deal of reason for the opposition to the present policy of the Board of Agriculture. Years ago, when isolation was the rule, the disease was stamped out—it probably took a long time, but there is no reason why this policy of slaughter should be pursued if there is an alternative of equal value. No doubt, where a farmer is unfavourably situated for isolation, the policy of slaughter is good, but when the disease is widespread, if slaughter is to be continued, it means clearing off the whole of the animals. It seems to me, as foot-and-mouth is not a fatal disease, the other side of the question deserves some consideration.

Mr. GILLARD: As opinion is divided, I shouod like to support Major Hobday's motion. With all deference to Professor MacQueen, personally I think it would be a very great pity indeed if the Ministry were, on this particular occasion, to change their policy. This particular outbreak dates back to August, and the worst will soon be over, and if the Ministry are not forced to do so beforehand, the end of the month will probably witness the end of the demand. I hope that the Ministry will hold out and that they will not give in one iota. (Hear, hear.)

Captain KIRK: Is it not a fact that it is the loss of condition that we are up against? It is, I believe, about £5 a beast. Moreover, the disease might assume a virulent form in any year.

Mr. WINTER: Another aspect is the great danger involved by the isolation and treatment policy to the trade in thoroughbred stock from this to other countries. That would be, as of course it is now, stopped while the disease lasts.

Major HOBDAY: If the disease had not been taken in hand as it has been, it would have been all over England to the same disastrous extent that it is now prevalent in the worst affected areas.

General MOORE: The resolution is to support the Ministry of Agriculture in their judgment as to the handling of the disease, but in my opinion slaughter is implied.

In India, where the disease is endemic, it has been nearly proved that recovered cases may contract the disease in exactly five months. I would suggest that the resolution should be sent to other veterinary societies, so that they may take similar action.

Mr. MARTIN: I should like to call attention to what seems to me a very important point, as to the estimation in which the profession is held by the public at large, and that so many people have the idea that we do not know what to do to cure the disease. It does seem to me a pity that we cannot do some powerful propaganda in order to convince the poeple that the question of slaughtering is purely a matter of economic policy.

The resolution was then put to the meeting and carried nem. con.

ANY OTHER BUSINESS.—The Hon. SECRETARY announced that, at the meeting of Council which had preceded the general meeting it was decided to recommend that Dr. Tuck, who is the representative of the U.S.A. Animal Bureau, should be elected a Fellow of the Society during the four or five years that he was to be in this country. It was also recommended that Mr. Roots and Mr. Salisbury Price be elected Hon. Life Fellows of the Society. These recommendations were unanimously agreed.

Mr. HENRY GRAY then presented his paper on "Rickets," and a good discussion followed.

[Mr. Gray's paper, together with the ensuing discussion, receive separate publication.—Ed.]

A vote of thanks to the President concluded a meeting of great interest.

J. F. MACDONALD,
Hon. Secretary.

Notes and News.

The Editor will be glad to receive items of professional interest in these columns

Diary of Events.

Feb. 8th—Midland Division, Annual General Meeting at Birmingham.

Feb. 16th—Joint Meeting of the West of Scotland and Scottish Metropolitan Divisions, at Glasgow.

The first meeting of the Provisional Committee has been arranged to take place, at 3 p.m., at the Station Hotel, Perth, on Thursday, January 31st. The number of members on this committee is about one hundred and twenty, and out of this number there ought to be many who will make a special effort to be present. At this meeting will be arranged the general outline of the programme for the Congress at Aberdeen. We hope all those gentlemen—in Scotland, at least—who have been summoned to attend will make next Thursday a holiday from practice and congregate at Perth. We understand that our President, Mr. Dawes, will be there and with him several representatives from this side of the border.

* * * *

Congratulations to Mr. F. C. Gillard on his taking the Presidential Chair of the South Eastern Division. His term of office had a splendid send-off last week at the annual meeting and dinner. He follows an excellent chairman in Major Dunkin, but his speeches at the dinner showed him to have talents which will prove useful at subsequent meetings.

* * * *

The dinner was festive, to say the least of it, and the presence of many ladies made it more than usually enjoyable. We were sorry that the Hon. Secretary, Mr. H. P. Hogben, had to leave before he could hear the eulogies which were spoken of him when his health was toasted. He, no doubt, would have been pleased to know how much his work is appreciated.

* * * *

Mrs. Bailey's speech was one of the best ever heard at a veterinary dinner, and pleased everyone, while at the same time causing much amusement. The toasting of the gentlemen by the ladies (with musical honours) was received with enthusiasm.

* * * *

Members will notice an increase in size, last week and again this week, of the *Veterinary Record*. This is made possible as a result of greater interest on the part of members themselves. More contributions have come to hand, and now that we have a better margin to work on, the Editorial Committee have decided that so long as members will support them by sending articles, the *Record* shall be enlarged to meet requirements. The more papers that arrive the better the *Record* will become.

Members of the profession who grumble about the number of unqualified persons who are allowed to practise should have their attention directed to the reply of the Minister of Health in the House of Commons on Friday, 18th January, to a question concerning advertisements issued by unskilled, untrained and unqualified people practising medicine and surgery, and claiming special knowledge and ability to cure such dreaded diseases as cancer.

* * * *

Sir. Wm. Joynson-Hicks said: "My attention has been called to a recent case where it appears that a patient may have been misled by an advertisement, but no information is available as to the extent of the evil to which the hon. member refers, and I doubt whether legislation to prohibit unqualified medical practice would be regarded as uncontroversial."

It is well for us to remember that our profession is not the only one which suffers from the efforts of the unregistered.

R.S.I. Public Health Courses.

Our advertisement columns contained last week, as they will next, a notice of the courses of training for Public Health Officers, arranged by the Royal Sanitary Institute, commencing on January 28th.

These training courses are of particular interest to students desiring to qualify for appointments on the staff of Public Health Authorities.

The training not only includes lectures, but practical demonstrations in the Museum of Sanitary Appliances, at Infant Consultations and Child Welfare Centres, visits to Public Abattoirs, Fish Markets, and to public works and other places of sanitary interest, and the use of a Reference Library, Lending Library and Reading Room.

The Lectures are followed by the standard Examinations of the Institute, which are recognised in all parts of the British Empire.

The Royal College of Veterinary Surgeons.

Obituary.

Houston, Thomas L., Allan Park House, Stirling. Qualified Glasgow, 15th July, 1884. Died 12th January, 1924. Aged 64.

The late Monsieur Léon Moulé.

We regret to announce the death of Monsieur Léon Moulé, which took place suddenly on the 30th December, 1923, at Vitry-le-Francois, near Paris. Monsieur Moulé, who was in his 75th year, was formerly Chief of the Municipal Sanitary Service of Paris, and is well known as the author of the most comprehensive history of Veterinary Science in France. He was an enthusiastic student of the history of our art, being particularly interested in the traces to be found of the care of animals in the Homeric Epics. He has contributed a long series of articles on this subject during the past twenty years to several of the French veterinary and historical journals. He was Chevalier de la Légion d'Honneur, and Officier du Mérite Agricole.

(Continued at foot of next column.)

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Foot-and-Mouth Disease.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In the matter of this malady, too much prominence seems to be given to discussing the policy of slaughter or otherwise and too little consideration to research and experiment in connection with the disease. The arena seems to be shared by fighters and writers, and the calm deductive reasoning of scientific men is somewhat sparse. I have just been reading about fifty press comments from different newspapers on the stamping out and isolation and treatment policies adopted at different periods. The ruts that writers follow are evident in all of them and nobody seems to get any "forrarder."

I have also been reading an article by Professor M. L. Panisset, on the measures adopted in Switzerland against "foot-and-mouth disease" during recent years—there, neither slaughter nor isolation and treatment seem to have stamped out the disease, and despite most rigorous sanitary procedure, "there is no sanitary barrier solid enough to oppose the extension of the malady or to avoid its penetration into free zones."

There is one aspect of the matter that, singularly enough, seems to be overlooked almost entirely—I refer to prevention by internal medication and local treatment. The greatest benefactor, to my mind, at the present time would be the man who could show that, despite the fact that foot-and-mouth disease was raging round about him, he had by local and internal agents prevented his own cattle from contracting the disease. I do not want to be misunderstood, and am not suggesting universal isolation and treatment. What I am advocating is the keeping of healthy cattle in health in areas of infection—the port of entry of the virus is probably known, and if it is, the measures to exemplify the old saw about prevention being better than cure ought not to be impossible of attainment.

—Yours truly, G. MAYALL.
Bolton, *January* 13th, 1924.

(*Continued from previous column.*)

MR. H. L. ROBERTS' BEREAVEMENT.

The death of Sir Thomas Lee Roberts, father of Mr. Horace L. Roberts, veterinary surgeon, of Ipswich, occurred on Friday morning, at Doddington Lodge, near Ludlow. Sir Thomas was 75 years of age.

Born at Stockport, Lancs., he entered the legal profession, and was called to the Bar in 1879, being a well-known pleader in common law and bankruptcy matters in the London Courts and on the Northern Circuit. For between thirty and forty years he was a resident of Bedford and a prominent figure in the public life of the town, besides filling the position of leader of the local Liberal Party. In 1893 he was Parliamentary Liberal candidate for West Bromwich.

Sir Thomas, who was knighted in 1918, was one of the founders of the Anglo-American League, which was merged in the Pilgrims' Society. In recent years he had lived in retirement at Doddington Lodge, near Ludlow, where his chief recreation was in the enjoyment of a well-stocked library.

Serum for In-Contacts.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Now that the Ministry of Agriculture proposes to allow certain foot-and-mouth outbreaks to be isolated and treated, may I suggest that serum from recovered animals be put in suitable containers and distributed to certain centres, thus enabling it to be used, subcutaneously, on all in-contact animals wherever a fresh outbreak occurs? According to medical reports, this method of serum protection has been used, with great success, in hospitals treating several highly-infectious diseases in the same ward.

The dose of serum used is about 10cc. per person. Thus it would require about 4$\frac{3}{5}$ to 6$\frac{3}{5}$ per 10 to 12 cwt. beast.

One gallon of serum would, therefore, be sufficient for about thirty to forty beasts.—Yours faithfully, K. A. MILES.

Husbands Bosworth, Rugby,
January 17th, 1924.

ANSWERS TO CORRESPONDENTS.

H. S. Robinson.—Thanks for your letter; the scheme you suggest is already in operation.

A. L. Robinson.—Thanks for your letter and enclosure, which will appear shortly. We much appreciate your kind expressions.

F. Atkinson.
J. A. Meredith. } Many thanks. Publication follows.

F. Somers.—Your offer will come before our Committee.

The Editor begs to acknowledge the receipt of the following:—
Communications from Messrs. J. A. Meredith (Llansaintffraid), J. Clunies Ross (Sydney, N.S.W.), and W. Shipley (Gt. Yarmouth).

BOTULISM

is the term applied to an intoxication produced by the toxin of Bacillus Botulinus, Types A and B. The symptom-complex of botulinus poisoning in domestic animals is identical with a number of conditions frequently observed in horses, cattle, sheep, and often referred to as

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